**LPDES PERMIT NO. LA0003301, AI No. 1409**

**LPDES FACT SHEET and RATIONALE**
FOR THE DRAFT LOUISIANA POLLUTANT DISCHARGE ELIMINATION SYSTEM
(LPDES) PERMIT TO DISCHARGE TO WATERS OF LOUISIANA

**I. Company/Facility Name:** The Dow Chemical Company
Louisiana Operations
Post Office Box 150
Plaquemine, Louisiana 70765

**II. Issuing Office:** Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services
Post Office Box 4313
Baton Rouge, Louisiana 70821-4313

**III. Prepared By:** Brian Mueller
Water Quality Protection Division (6WQ-PP)
Phone #: (214) 665-7167
E-mail: mueller.brian@epamail.epa.gov

**LDEQ Contact:** Sonja Loyd
Industrial Permits Section
Water Permits Division
Phone #: (225) 219-3090
E-mail: sonja.loyd@la.gov

**Date Prepared:** May 08, 2008

**IV. Permit Action/Status:**

A. Reason For Permit Action:

Proposed reissuance of an existing Louisiana Pollutant Discharge Elimination System (LPDES) permit for a 5-year term following regulations promulgated at LAC 33:IX.2711/40 CFR 122.46.

LAC 33:IX Citations: Unless otherwise stated, citations to LAC 33:IX refer to promulgated regulations listed at Louisiana Administrative Code, Title 33, Part IX.

40 CFR Citations: Unless otherwise stated, citations to 40 CFR refer to promulgated regulations listed at Title 40, Code of Federal Regulations in accordance with the dates specified at LAC 33:IX.4901, 4903, and 2301.F.

B. LPDES permit - LPDES permit effective date: March 1, 2002
LPDES permit expiration date: November 30, 2006
EPA has not retained enforcement authority.

LPDES Multi-Sector General Permit – (LAR05N128)
LPDES permit effective date: May 1, 2006
LPDES permit issuance date: May 24, 2006
LPDES permit expiration date: April 30, 2011

C. Application received on May 24, 2006 with addenda received on July 5, 2007, August 20, 2007, November 14, 2007, April 21, 2008, April 28, 2009, and May 18, 2009. Additional information received via email correspondence on May 12, 2009, June 26, 2009, July 9, 2009, and July 21, 2009.

## V. Facility Information:

A. Location –

The facility is located at 21255 Louisiana Highway 1 in Plaquemine, Louisiana in both Iberville and West Baton Rouge Parishes (Latitude 30°18'50", Longitude 91°14'26").

B. Applicant Activity -

The Louisiana Operation has numerous production plants, power and steam generation units, waste handling facilities, and docks for barges and ships. The major raw materials for the division include brine, hydrocarbon liquids, and fuel gas. From these raw materials, power, chlorine, caustic, ethylene, and propylene are produced as intermediates. Approximately 50 different chemicals are produced for distribution around the world.

Several corporations (embedded at or adjacent to the Plaquemine site) discharge to the Plaquemine system. These include:

INEOS – INEOS is a chemical manufacturing facility that discharges wastewater and storm water under LPDES Permit No. LA0115100 to the Plaquemine cooling water return system. Process wastewater from INEOS is discharged to the Plaquemine central wastewater treatment plant (WWTP) for treatment.

Air Products – The Air Products facility discharges under LPDES Permit LA0063860 to the Plaquemine cooling water return system.

Air Liquide – The Air Liquide facility discharges stormwater, process water, and treated sanitary water under LPDES Permit LA0050695 to the Plaquemine cooling water return system.

PolyOne – The PolyOne facility is a polyvinyl chloride (PVC) resin mixing plant. As currently permitted under LPDES Permit LA0006165, the discharges include once through non-contact cooling water, excess well water, process area washdown water, and stormwater runoff to the Plaquemine cooling water return system.

The following Dow service facility at the Plaquemine site discharges to the Plaquemine system:

Transport Service Co. – Wastewater from their Tank Truck Wash Facility located near Loading Dock 2 is sent to the central WWTP via a pipeline.

C. Technology Basis - (40 CFR Chapter 1, Subchapter N/Parts 401, 405-415, and 417-471 have been adopted by reference at LAC 33:IX.4903)

| Guideline | Reference |
|---|---|
| Organic Chemicals, Plastics, and Synthetic Fibers | 40 CFR 414 Subparts D, F, G, H, I, and J |

Inorganic Chemicals
Chlor Alkali

40 CFR 415
Subpart F

| Outfall | Plant | OCPSF Subpart D 414.41 | OCPSF Subpart F 414.61 | OCPSF Subpart G 414.71 | OCPSF Subpart H 414.81 | Inorganic Subpart F 415.62 |
|---|---|---|---|---|---|---|
| 111 (1081) | Polyethylene A | 100% | | | | |
| 121 (931) | Polyethylene B | 100% | | | | |
| 311 (531) – Phase I | Solvents/EDC 1 | | 78% | 22% | | |
| 311 (531) – Phase II | Solvents/EDC 1 | | | 100% | | |
| 411 (301) | Chlorine and Caustic I | | | | | 100% |
| 421 (911) | Polyethylene B | 100% | | | | |
| 511 (2501) | Vector SBC | 100% | | | | |
| 521 (1521) | Chlorinated Methanes | | | 100% | | |
| 541 (1531) | Chlorinated Methanes | | | 100% | | |
| 551 (741) | LHC II | | 100% | | | |
| 611 (1711) | Vinyl II | | 100% | | | |
| 621 (2241) | LHC III | | 100% | | | |
| 631 (2001) – Phase I | Environmental Operations | 1.3% | 83.8% | 11.5% | 3.4% | |
| 631 (2001) – Phase II | Environmental Operations | 1.7% | 77.8% | 15.8% | 4.7% | |
| 641 (3121) | Polyethylene C | 100% | | | | |

Other sources of technology based limits:
LDEQ Stormwater Guidance, letter dated 6/17/87, from J. Dale Givens (LDEQ) to Myron Knudson (EPA Region 6).
Best Professional Judgement
Current Permit

D. Fee Rate -
1. Fee Rating Facility Type: major
2. Complexity Type: VI
3. Wastewater Type: II
4. SIC codes: 2869, 2821, 2819, and 2812

E. Continuous Facility Effluent Flow - 597 MGD

**VI. Receiving Waters:** Mississippi River (Outfalls 001 and 002)

**Mississippi River (Outfalls 001 and 002)**
1. TSS (15%), mg/L: 32
2. Average Hardness, mg/L $CaCO_3$: 153.4
3. Critical Flow, cfs: 141,955
4. Mixing Zone Fraction: 1/3
5. Harmonic Mean Flow, cfs: 366,748
6. River Basin: Mississippi River, Subsegment No. 070301
7. Designated Uses:
   primary contact recreation, secondary contact recreation, fish and wildlife propagation, and drinking water supply.

Information based on the following: LAC 33:IX Chapter 11 and Recommendation(s) from the Engineering Section. Hardness and 15% TSS data come from a memorandum from Brian Baker (LDEQ Engineering Section) to Sonja Loyd (LDEQ Water Permits Division), dated August 25, 2006.

**VII. Outfall Information:**

Outfall 001

A. Type of wastewater - This final outfall consists of the discharge of Cooling Water Return (CWR) Canal A to the Mississippi River. CWR Canal A receives flow from Canals B, C, D, E, and F, and includes the wastewaters described in all internal outfalls within the manufacturing areas, as well as, stormwater runoff, once through cooling water, and utility wastewater flows (i.e., hydrostatic test water, hydroblast water, deluge test water, fire hydrant test water, condensate, utility discharge from turnaround activities, de-ionized (DI) water, air conditioner condensate, cooling tower blowdown, regeneration streams, water treatment discharges, steam traps, and clean equipment/slab wash down).

B. Location - At the point of discharge from the intake to the Cooling Water Return pump station prior to pumping the cooling water over the levee and into the Mississippi River at Latitude 30°18'35", Longitude 91°13'48".

C. Treatment – treatment of process wastewaters from all of the internal outfalls consists of:
   - neutralization

D. Flow - Continuous Flow, 597 MGD

E. Receiving waters - Mississippi River

F. Basin and Subsegment - Mississippi River Basin, Subsegment No. 070301

Internal Outfall 101 (previously named Internal Outfall 112 in the May 2006 Application)

A. Type of wastewater - Internal Outfall 101 (112) on CWR Canal B discharge consists of cooling water returns, fire deluge water, utility wastewater, non-process area stormwater, discharges from Internal outfalls 121 (931) and 111 (1081), and discharges from neighboring company PolyOne. This internal outfall discharges to CWR Canal A and then to Outfall 001.

B. Location - At the point of discharge from the southern end of CWR Canal B, prior to mixing with other waters in CWR Canal A at Latitude 30°18'43", Longitude 91°13'59".

C. Treatment - treatment of process wastewaters consists of:
- neutralization

D. Flow - Continuous Flow, 106 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 111 (previously named Internal Outfall 1081 in the May 2006 Application)

A. Type of wastewater - This internal outfall is a virtual outfall consisting of the discharge of OCPSF process wastewater and OCPSF process area stormwater, once through cooling water, and utility wastewater from the Polyethylene A Plant. The sampling locations discharge to CWR Canal B, through Internal Outfall 101 (112), then to Outfall 001.

B. Location - Polyethylene A Plant – The virtual internal outfall coordinates are Latitude 30°18'58", Longitude 91°13'38".

Internal Outfall consists of five sampling locations. Sampling Location 1031 (North side at overflow weir), Sampling Location 1041 (Northeast side at overflow weir), Sampling Location 1051 (Middle of block at swimming pool overflow weir), Sampling Location 1061 (Southeast corner of block in concrete ditch) and Sampling Location 1071 (Middle of block at SK-120G skimmer). All are sampled before discharge from the Polyethylene A Plant in Block 8, prior to mixing with other waters in CWR Canal B.

C. Treatment - treatment of process wastewaters consists of:
- over/underflow weir (oil removal)

D. Flow - Continuous Flow, 2.0 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 121 (previously Internal Outfall 931)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater, OCPSF process area stormwater, once through cooling water, and utility wastewater from the Polyethylene B Plant. This internal outfall discharges to CWR Canal B, through Internal Outfall 101 (112), and then to Outfall 001.

B. Location - Polyethylene B Plant – The virtual internal outfall coordinates are Latitude 30°19'03", Longitude 91°13'38".

This internal outfall consists of two components which discharge separately at the southeast corner of the Polyethylene B Plant, just west of the fence line in Block 9, prior to mixing with other waters in CWR Canal B. Location 121A is sampled at the effluent for pit 7 and 121B is sampled on the north side of the plant at pit 32.

C. Treatment - treatment of process wastewaters consists of:
- over/underflow weir (oil removal)

D. Flow - Continuous Flow, 0.362 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 201 (previously Internal Outfall 521)

A. Type of wastewater - This internal outfall consists of the discharge of non-categorical process wastewater, once through cooling water, utility wastewater, and non-process area stormwater from the Solvents/EDC I Plant. This internal outfall discharges to CWR Canal A and then to Outfall 001.

B. Location - Solvents/EDC I Plant - At the point of discharge from the Solvents/EDC I Plant TTU lined ditch, from a catwalk in the northeast corner of Block 15, prior to mixing with other waters in CWR Canal A at Latitude 30°18'52", Longitude 91°14'00".

C. Treatment - treatment of process wastewaters consists of:
- neutralization
- dechlorination

D. Flow – Continuous Flow, 2.09 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 301 (previously named Internal Outfall 114 in the May 2006 Application)

A. Type of wastewater - Internal Outfall 301 (114) on CWR Canal D discharge consists of cooling water returns, fire deluge water, utility wastewater, non-process area stormwater, post first flush OCPSF stormwater, and discharges from Internal Outfall 311 (531). This internal outfall discharges to CWR Canal A and then to Outfall 001.

B. Location - At the point of discharge from the southern end of CWR Canal D, prior to mixing with other waters in CWR Canal A at Latitude 30°18'51", Longitude 91°14'10".

C. Treatment - treatment of process wastewaters consists of:
- neutralization

D. Flow - Continuous Flow, 61.9 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 311 (previously Internal Outfall 531)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater, OCPSF process area stormwater, non-categorical process wastewater, recovered groundwater, once through cooling water, and utility wastewater from the Solvents/EDC I Plant. This internal outfall discharges to CWR Canal D, through Internal Outfall 301 (114), and then to Outfall 001.

B. Location - Solvents/EDC I Plant - At the point of discharge southeast of the Solvents/EDC I Plant control room (Building 1617) in Block 16, prior to mixing with other waters in CWR Canal D at Latitude 30°18'57", Longitude 91°14'03".

C. Treatment - treatment of process wastewaters consists of:
- steam stripping
- neutralization

D. Flow - Continuous Flow, 8.45 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 401 (previously named Internal Outfall 115 in the May 2006 Application)

A. Type of wastewater - Internal Outfall 401 (115) on CWR Canal E discharge consists of cooling water returns, fire deluge water, utility wastewater, carbon bed backwash, non-process area stormwater, discharges from Internal Outfalls 421 (911) and 411 (301), and discharges from Power III. This internal outfall discharges to CWR Canal A and then to Outfall 001.

B. Location - At the point of discharge from the southern end of CWR Canal E, prior to mixing with other waters in CWR Canal A at Latitude 30°18'58", Longitude 91°14'18".

C. Treatment - treatment of process wastewaters consists of:
- neutralization

D. Flow - Continuous Flow, 143.7 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 411 (previously Internal Outfall 301)

A. Type of wastewater - This internal outfall is a virtual outfall consisting of the discharge of inorganic process wastewater, process area stormwater, once through cooling water, and utility wastewater from the Chlorine Plant and the discharge of inorganic process wastewater, process area stormwater, non-process area stormwater, and utility wastewater from the Caustic Plant. This internal outfall discharges to CWR Canal E, through Internal Outfall 401 (115), and then to Outfall 001.

B. Location - The virtual internal outfall coordinates are Latitude 30°19'06", Longitude 91°14'09".

Chlorine Plant – Internal Outfall consists of three components: one at the point of discharge from the 48-inch concrete trench on the east side of CWR Canal E in Block 26 and two upstream in the concrete trench for TSS sampling locations (OFT-10 and OFT-CSS). All three are prior to mixing with other waters in CWR Canal E.

Caustic Plant - Located at point of discharge from the 36-inch flume located on the south side of the caustic block, prior to mixing with other waters in CWR Canal E.

C. Treatment - treatment of process wastewaters consists of:
- neutralization

D. Flow – Continuous Flow, 20.1 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 421 (previously Internal Outfall 911)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater, OCPSF process area stormwater, once through cooling water, and utility

wastewater from the Polyethylene B Plant. This internal outfall discharges to CWR Canal E, through Internal Outfall 401 (115), and then to Outfall 001.

B. Location - Polyethylene B Plant – At the point of discharge from 421A (911A) located at the southwest corner of the Polyethylene B Plant, at the corner of North Canal Road and the railroad track in Block 9, prior to mixing with other waters in CWR Canal E at Latitude 30°19'09", Longitude 91°13'44".

C. Treatment - treatment of process wastewaters consists of:
- over/underflow weir (oil removal)

D. Flow - Continuous Flow, 2.55 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 501 (previously named Internal Outfall 116 in the May 2006 Application)

A. Type of wastewater - Internal Outfall 501 (116) on CWR Canal A upstream of CWR of Canal E discharge consists of cooling water returns, fire deluge water, utility wastewater, non-process area stormwater, post first-flush OCPSF storm water, discharges from Internal Outfalls 541 (1531), 521 (1521), 531 (1561), 511 (2501), and 601 (117), and discharges from embedded company (INEOS). This internal outfall discharges to CWR Canal A and then to Outfall 001.

B. Location - At the point of discharge from the southwestern end of CWR Canal A prior to mixing with other waters in CWR Canal E at Latitude 30°18'58", Longitude 91°14'21".

C. Treatment - treatment of process wastewaters consists of:
- neutralization

D. Flow - Continuous Flow, 283.3 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 511 (previously Internal Outfall 2501)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater, OCPSF process area storm water, utility wastewater, and non-process area stormwater from the Vector SBC Plant. This internal outfall discharges to CWR Canal A, through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Vector Styrene, Butadiene, Copolymer (SBC) Plant – At the point of discharge from the weir in the concrete ditch at the northwest corner of the Vector SBC Plant in Block 43, prior to mixing with other waters in CWR Canal A at Latitude 30°19'00", Longitude 91°14'31".

C. Treatment - treatment of process wastewaters consists of:
- over/underflow weir (oil removal)
- pellet traps

D. Flow - Intermittent Flow, 0.425 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 521 (previously Internal Outfall 1521)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater, OCPSF process area storm water, non-process area storm water, once through cooling water, and utility wastewater from the Chlorinated Methanes Plant. This internal outfall discharges to CWR Canal A, through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Chlorinated Methanes Plant - At the point of discharge from the North side of the sump outfall weir on the southwest side of Chlorinated Methanes Plant in Block 46, prior to mixing with other waters in CWR Canal A at Latitude 30°19'12", Longitude 91°14'28".

C. Treatment - treatment of process wastewaters consists of:
- air stripper (as needed)

D. Flow - Intermittent Flow, 1.30 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 531 (previously Internal Outfall 1561)

A. Type of wastewater - This internal outfall consists of the discharge of non-categorical process wastewater (thermal treatment unit) from the Chlorinated Methanes Plant. This internal outfall discharges to CWR Canal A, through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Chlorinated Methanes Plant - At the point of discharge from the Chlorinated Methanes Plant thermal treatment unit (TTU), at the discharge piping sample point on the west side of the shot pond in Block 46, prior to mixing with other waters in CWR Canal A at Latitude 30°19'10", Longitude 91°14'24".

C. Treatment - treatment of process wastewaters consists of:
- neutralization

D. Flow - Continuous Flow, 0.334 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 541 (previously Internal Outfall 1531)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater from the Chlorinated Methanes Plant. This internal outfall discharges to CWR Canal A, through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Chlorinated Methanes Plant - At the point of the discharge piping sample point from the steam column, on the southwest side of Chlorinated Methanes Plant in Block 46, prior to mixing with other waters in CWR Canal A at Latitude 30°19'14", Longitude 91°14'26".

C. Treatment - treatment of process wastewaters consists of:
- steam stripper

D. Flow - Continuous Flow, 0.077 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 551 (previously Internal Outfall 741)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater, OCPSF process area stormwater, once through cooling water, and utility wastewater from the LHC II Plant. This internal outfall discharges to CWR Canal F, through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Light Hydrocarbons #2 (LHC II) Plant - At the point of discharge from the LHC II Plant on the western side of Block 48, prior to mixing with other waters in CWR Canal F at Latitude 30°19'27", Longitude 91°14'15".

C. Treatment - treatment of process wastewaters consists of:
- over/underflow weir (oil removal)

D. Flow - Intermittent Flow, 0.879 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 601 (previously named Internal Outfall 117 in the May 2006 Application)

A. Type of wastewater - Internal Outfall 601 (117) on CWR Canal G discharge consists of cooling water returns, fire deluge water, utility wastewater, non-process area stormwater, and Internal Outfalls 631 (2001), 641 (3121), 621 (2241), 611 (1711), 651 (3001), and 551 (741) and discharges from embedded companies (Air Products and Air Liquide). This internal outfall discharges to CWR Canal F, through Internal Outfall 501 (116) and then to Outfall 001.

B. Location - At the point of discharge from the southern end of CWR Canal G, prior to mixing with other waters in CWR Canal F at Latitude 30°19'25", Longitude 91°14'22".

C. Treatment - treatment of process wastewaters consists of:
- neutralization

D. Flow - Continuous Flow, 25.9 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 611 (previously Internal Outfall 1711)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater, OCPSF process area stormwater, once through cooling water, and utility wastewater from the Vinyl II Plant. This internal outfall discharges to CWR Canal G, through Internal Outfall 601 (117), through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Vinyl II Plant – At the point of discharge from the ditch at the northeast corner of the Vinyl II Plant in Block 66, prior to mixing with other waters in CWR Canal G at Latitude 30°19'26", Longitude 91°14'30".

C. Treatment - treatment of process wastewaters consists of:
- steam stripper
- neutralization

D. Flow - Continuous Flow, 4.16 MGD (Phase I) and 11.25 MGD (Phase II)

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 621 (previously Internal Outfall 2241)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater, OCPSF process area stormwater, and utility wastewater from Light Hydrocarbons III Plant. This internal outfall discharges to CWR Canal G, through Internal Outfall 601 (117), through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Light Hydrocarbons III (LHC III) Plant – At the point of discharge from the central sump located at the southeast corner of the LHC III Plant in Block 68, prior to mixing with other waters in CWR Canal G at Latitude 30°19'30", Longitude 91°14'28".

C. Treatment - treatment of process wastewaters consists of:
- none

D. Flow - Intermittent Flow, 0.409 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 631 (previously Internal Outfall 2001)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater (including wastewater from the INEOS facility), OCPSF process area stormwater, sanitary wastewater, utility wastewater, and OCPSF wastewater (landfill operations) from the Environmental Operations Plant. This internal outfall discharges to CWR Canal G, through Internal Outfall 601 (117), through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Environmental Operations – At the point of discharge from the effluent ditch associated with the Environmental Operations in Block 80, prior to mixing with other waters in CWR Canal G at Latitude 30°19'53", Longitude 91°14'22".

C. Treatment - treatment of process wastewaters consists of:
- equalization
- biological aeration
- clarification
- pH adjustment
- sludge dewatering

D. Flow – Continuous Flow, 17.9 MGD (Phase I) and 17.6 MGD (Phase II)

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 641 (previously Internal Outfall 3121)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater, OCPSF process area stormwater, and utility wastewater from the Polyethylene C Plant. This internal outfall discharges to CWR Canal G, through Internal Outfall 601 (117), through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Polyethylene C Plant – At the point of discharge from the effluent weir at the pond located on the northern side of the Polyethylene C Plant in Block 86, prior to mixing with other waters in CWR Canal G at Latitude 30°19'38", Longitude 91°14'40".

C. Treatment - treatment of process wastewaters consists of:
- over/underflow weir (oil removal)
- pellet traps

D. Flow - Continuous Flow, 0.568 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Internal Outfall 651 (previously Internal Outfall 3001)

A. Type of wastewater - This internal outfall consists of recovered groundwater from the Northwest Landfill. This internal outfall discharges to CWR Canal G, through Internal Outfall 601 (117), through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Northwest Landfill – At the point of discharge from the pump at the Northwest Landfill on the northern side of the Polyethylene C Plant in Block 86 at the discharge piping, prior to mixing with other waters in CWR Canal G at Latitude 30°20'03", Longitude 91°15'02".

C. Treatment - treatment of process wastewaters consists of:
- carbon absorption

D. Flow - Intermittent Flow, 0.047 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

Outfall 002

A. Type of wastewater - This final outfall consists of the discharge from Tank Farm Block 110 to the Mississippi River. Discharge sources include secondary containment stormwater and utility wastewater.

B. Location – Tank Farm Block 110 – At the point of discharge from the south end of the oil water separator in Tank Farm Block 110, prior to pumping the discharge over the levee and into the Mississippi River at Latitude 30°20'25", Longitude 91°14'30".

C. Treatment - treatment of clarifier underflow wastewaters consists of:
- over/underflow weir (oil removal)

D. Flow – Intermittent Flow, 0.211 MGD

E. Receiving waters - Mississippi River

F. Basin and Subsegment - Mississippi River Basin, Subsegment No. 070301

**VIII. Proposed Permit Limits:**

The specific effluent limitations and/or conditions will be found in the draft permit. Development and calculation of permit limits are detailed in the Permit Limit Rationale section below.

Summary of Proposed Changes From the Current LPDES Permit:

A. The permittee requested an effective date extension of one-hundred and twenty (120) days since the changes in the proposed permit changes will cause significant alterations in the outfall monitoring and management systems. The permittee's request has been granted.

B. The outfall naming nomenclature for all of the internal outfalls has been changed to coincide with LDEQ's naming convention based on information provided by the permittee in the April 23, 2009 Application Addendum. The internal outfall numbers listed in the current permit have been placed in parentheses for reference purposes.

C. The technology-based mass limits for those internal outfalls that contain mass limits have been changed as a result of the flow rates provided by the permittee in the May 2006 Application and associated addendums.

D. The permittee requested monitoring frequency reductions in accordance with the Interim Guidance for Performance-Based Reduction of NPDES Permit Monitoring Frequencies (April 1996). See Appendix C for a listing of the monitoring frequency reductions that have been granted in accordance with the guidance document mentioned above or by department discretion.

E. Outfall 001

The permittee requested that a monitoring requirement for several constituents of concern from potential groundwater inputs into the return canal system be added into the draft permit. The permittee also requested that the monitoring frequency for these parameters be once per year using a grab sample. These requests have been granted.

The permittee is required to sum the mass loading of hexachlorobenzene for several internal outfalls in the current permit in order to determine compliance with the water quality-based limit for this parameter. However, the permittee requested that this parameter be measured at the final outfall instead of the internal outfalls in this draft permit. This request has been granted.

The permittee's request for a monitoring frequency reduction for hexachlorobenzene from once per week to once every two (2) months in accordance with the Interim Guidance for Performance-Based Reduction of NPDES Permit Monitoring Frequencies (April 1996) will not be granted per implementation procedures for surface water quality standards since this constituent is on-site and limited based on water quality.

The Whole Effluent Toxicity (WET) testing dilution series for Freshwater Acute biomonitoring will be changed to reflect 8%, 11%, 14%, 19%, and 26% (with 19% defined as the critical biomonitoring dilution). The monitoring frequency shall be once per quarter using a 24-hour composite sample. This revision is based on a recommendation from the Technical Support Section in accordance with the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, April 16, 2008. The proposed biomonitoring requirements were developed in accordance with USEPA Region 6 policy and biomonitoring protocol which is being established in all major permits as a part of the permit reissuance

process. Updated Part II Conditions for the biomonitoring requirements will be established in the draft permit. See Appendix D for the Biomonitoring Recommendation.
The permittee requested a reduction in the monitoring frequency for WET testing from once per quarter to once/six (6) months. The proposed biomonitoring requirements were developed in accordance with USEPA Region 6 policy and biomonitoring protocol which have been established in all major permits as a part of the permit reissuance process. Therefore, the monitoring frequency will remain as proposed in the draft permit.

F. Internal Outfalls 101 (112), 301 (114), 401 (115), 501 (116), and 601 (117)

These new internal outfalls have been added for discharges at the ends of Cooling Water Return (CWR) Canals B, D, E, and G. The proposed new Internal Outfall 501 (116) is located in CWR Canal A upstream of the CWR Canal E discharge.

G. Internal Outfall 111 (1081)

This new internal outfall has been added for discharges from the Polyethylene A Plant. This internal outfall incorporates existing Internal Outfalls 1031, 1041, 1051, 1061, and 1071 into one virtual internal outfall. These internal outfalls will be designated as sampling locations for monitoring and reporting for the new internal outfall.

The permittee requested that the monitoring frequency for flow be established at once per month. The current permit established the monitoring frequency for flow at once per day for the internal outfalls named above. Therefore, the monitoring frequency for flow has been changed to once per week per department discretion.

The permittee requested a $BOD_5$ and TSS allocation of 20 mg/L (monthly average) and 30 mg/L (daily maximum) for utility wastewater based on discussions with EPA and LDEQ. This request will be granted by BPJ.

The permittee requested a $BOD_5$ and TSS allocation of 5 mg/L (monthly average) and 10 mg/L (daily maximum) for once-through cooling water and clarified cooling water based on discussions with EPA and LDEQ. This request will be granted by BPJ.

The permittee requested an allocation for Chloroform due to the contribution of a non-OCPSF source (once through cooling water) containing this constituent which is discharged from this internal outfall. Therefore, an allocation using the OCPSF limits (Subpart J) for Chloroform has been applied at this internal outfall by BPJ.

The permittee requested that the annual monitoring frequency for Chloroform be retained in the draft permit. However, the monitoring frequency will be changed to once per quarter based on the permittee's compliance history at Internal Outfall 1031 as it relates to this parameter. The permittee requested that a provision be placed in the draft permit that would allow the monitoring frequency to be reverted to once per year upon submittal of one year of sample data (twelve consecutive samples) which reflect discharges that comply with the permit limit for this parameter. The permittee also requested that the sample data be submitted within six (6) months following the monitoring frequency reduction indicating that the requirement to submit one year of sample data in compliance with the permit limits has been satisfied. These requests have been granted.

H. Internal Outfall 121(931)

The permittee requested that the monitoring frequency for flow be established at once per quarter. The current permit established the monitoring frequency for flow at once per day for this internal outfall. Therefore, the monitoring frequency for flow has been changed to once per week per department discretion.

The permittee requested a $BOD_5$ and TSS allocation of 20 mg/L (monthly average) and 30 mg/L (daily maximum) for utility wastewater based on discussions with EPA and LDEQ. This request will be granted by BPJ.

I. Internal Outfall 201 (521)

The current permit established a continuous monitoring frequency for flow at this internal outfall. The permittee requested that the monitoring frequency for flow be established at once per week to be consistent with the proposed monitoring frequency requested for the other parameters at this internal outfall. This request has been granted.

The permittee requested that two (2) phases be added into the draft permit for future shutdown of the Ethylene Dichloride manufacturing operations and cessation of process wastewater discharges from this operation which will occur in 2011. Under Phase II, the permittee requested that the monitoring frequency for 1,2 Dichloroethane be reduced from once per week to once per year. No change in the flow at this internal outfall is expected to occur under Phase II since the removal of process wastewater flow from the discharges at this internal outfall will be negligible. These requests have been granted.

Internal Outfall 301 (411)

The permittee requested that two (2) phases be added into the draft permit for future shutdown of the Ethylene Dichloride manufacturing operations and cessation of process wastewater discharges from this operation which will occur in 2011. Under Phase II, the permittee requested that the monitoring frequency for 1,2 Dichloroethane be reduced from once per week to once per year. These requests have been granted.

J. Internal Outfall 311 (531)

The permittee requested that two (2) phases be added into the draft permit for future shutdown of the Ethylene Dichloride manufacturing operations and cessation of process wastewater discharges from this operation which will occur in 2011. Under Phase II, the permittee indicated that although the Ethylene Dichloride wastewater would be ceasing that other flows will continue to be components in the discharge. Therefore, mass limits based on the new flows will be established for Phase II. This request has been granted.

The permittee's request that language be included in the draft permit allowing for an alternative procedure to continuously monitor for flow will be partially granted. A provision will be added in the Part II Conditions which allows an alternative procedure for continuous monitoring for flow. However, this provision will only apply to backup or auxilliary equipment used by the permittee to achieve compliance with the monitoring requirements for this parameter.

The permittee requested a $BOD_5$ and TSS allocation of 20 mg/L (monthly average) and 30 mg/L (daily maximum) for utility and non-categorical wastewater based on discussions with EPA and LDEQ. This request will be granted by BPJ.

The permittee requested a $BOD_5$ allocation of 5 mg/L (monthly average) and 10 mg/L (daily maximum) for once-through cooling water based on discussions with EPA and LDEQ. This request will be granted by BPJ.

The permittee requested that a net allotment for TSS in the influent water be applied at this internal outfall. The permittee also requested that the sample type for TSS be changed to reflect a 24-hour composite sample instead of a grab sample. These requests have been granted.

K. Internal Outfall 401 (115)

On or about November 30, 2006, the permittee acquired Ventures Lease Company, LLC (now Power III) which was previously covered under LPDES permits LA0116602 and LAG670070. The permittee has requested that the discharges from this operation be monitored at this internal outfall and that the LPDES permits be terminated upon reissuance of the final permit. This request will be granted.

L. Internal Outfall 411 (301)

This internal outfall had two sampling locations (311 and 321) in the current permit. However, due to the shut down of the Chlor-alkali Plant, discharges no longer occur from Sampling Location 311. Therefore, since the Chlorine Plant (Sampling Location 321) and Caustic Plant (Sampling Location 341) are regulated under the same guidelines, the permittee requested that Sampling Location 341 be included as a sampling location for this internal outfall instead of Sampling Location 311. This request has been granted.

The wastestreams discharging from Sampling Location 341 were changed to reflect the removal of once through cooling water. Therefore, Sampling Location 341 has been redefined to include only process wastewater for this portion of the chlorine production process.

The permittee requested that the monitoring frequency for flow at Sampling Locations 321 and 341 be established at once per two (2) months to be consistent with the monitoring frequency requested for the other parameters. The flow at Sampling Location 321 is recorded continuously and estimated daily at Sampling Location 341. Therefore, this Office has decided to partially grant the permittee's request. The monitoring frequency will be changed to reflect once per month using an estimate in lieu of continuously using a recorder.

The permittee requested a monitoring frequency reduction from once per week to once per two (2) months for all of the parameters established at this internal outfall. However, it will be partially granted by department discretion for all of the parameters with the exception of Total Nickel. This determination is based on DMR sample data which demonstrated that the permittee has not had any violations (with the exception of Total Nickel) at this outfall within past two years. The monitoring frequency for these parameters will be changed to reflect once per month in lieu of once per week.

M. Internal Outfall 421 (911)

Due to the shut down of a manufacturing train in Polyethylene Plant B, one of the sampling locations for this internal outfall will be eliminated. This shut down will reduce the process wastewater component and the remaining discharge will contain primarily once through cooling water. Therefore, the permittee requested an allocation for Chloroform due to the contribution of a non-OCPFS source (once through cooling water) containing this constituent

which is discharged from this internal outfall. An allocation using the OCPSF limits (Subpart J) for Chloroform has been applied at this internal outfall by BPJ.

In addition, this change will also re-designate the stormwater from the decommissioned equipment area to be non-contact stormwater. Therefore, the permittee requested that allocations for $BOD_5$ and TSS of 10 mg/L (monthly average) and 20 mg/L (daily maximum) be applied to this discharge. This request has been granted.

The permittee requested that the monitoring frequency for flow be established at once per quarter. The current permit established the monitoring frequency for flow at once per day for this internal outfall. Therefore, the monitoring frequency for flow has been changed to once per week per department discretion.

The permittee requested a $BOD_5$ allocation of 5 mg/L (monthly average) and 10 mg/L (daily maximum) for once-through cooling water based on discussions with EPA and LDEQ. This request will be granted by BPJ.

N. Internal Outfall 501 (116)

Based on information provided in the 2006 Application, the discharges from Shintech Louisiana, LLC (LPDES permit LAR10D207) were designated to flow from this internal outfall into the Plaquemine cooling water return system. However, based on the June 25, 2007 Application Addendum, the discharges from this facility into the cooling water return system have been discontinued.

O. Internal Outfall 521 (1521)

The permittee reviewed Appendix A and B of the OCPSF guidelines to assess the inclusion of metal bearing wastestreams at the internal outfalls that discharge OCPSF wastewaters. Based on the permittee's review, the methyl chloride/hydrochlorination of methanol process at the Chorinated Methanes Plant (CMP) was identified as a metal bearing wastestream listed for zinc. According to the permittee, a review of the Development Document for the OCPSF regulation cited zinc based catalysts or use as raw material as the reason for inclusion. The permittee certified that the CMP does not use zinc-based catalyst or raw materials in the process. Therefore, the permittee requested that limits for zinc not be established in the draft permit for discharges from the CMP. This request will be granted by BPJ.

P. Internal Outfall 531 (1561)

The permittee requested that a limit for TOC of 55 mg/L be established at this internal outfall in the draft permit. This request has been granted by BPJ.

Q. Internal Outfall 541 (1531)

The permittee requested that the sample method for all of the volatile compounds be changed from 24-hour composite sampling to grab due to personal safety concerns with elevated temperature of the discharges from this outfall. This request has been granted.

The permittee reviewed Appendix A and B of the OCPSF guidelines to assess the inclusion of metal bearing wastestreams at the internal outfalls that discharge OCPSF wastewaters. Based on the permittee's review, the methyl chloride/hydrochlorination of methanol process at the Chorinated Methanes Plant (CMP) was identified as a metal bearing wastestream

listed for zinc. According to the permittee, a review of the Development Document for the OCPSF regulation cited zinc based catalysts or use as raw material as the reason for inclusion. The permittee certified that the CMP does not use zinc-based catalyst or raw materials in the process. Therefore, the permittee requested that limits for zinc not be established in the draft permit for discharges from the CMP. This request will be granted by BPJ.

The permittee's request that language be included in the draft permit allowing for an alternative procedure to continuously monitor for flow will be partially granted. A provision will be added in the Part II Conditions which allows an alternative procedure for continuous monitoring for flow. However, this provision will only apply to backup or auxilliary equipment used by the permittee to achieve compliance with the monitoring requirements for this parameter.

R. Internal Outfall 551 (741)

The limits established at this internal outfall have been changed from mass limits to concentration limits due to the primary source of this discharge (stormwater) being infrequent and intermittent in nature.

The permittee's request that language be included in the draft permit allowing for an alternative procedure to continuously monitor for flow will be partially granted. A provision will be added in the Part II Conditions which allows an alternative procedure for continuous monitoring for flow. However, this provision will only apply to backup or auxilliary equipment used by the permittee to achieve compliance with the monitoring requirements for this parameter.

S. Internal Outfall 611 (1711)

The permittee indicated that the Vinyl II Plant will be shutdown in 2011. The permittee further indicated that it proposes to discontinue submission of DMRs for this internal outfall when the manufacturing related discharges cease. Therefore, this Office has decided that if the permittee chooses to discontinue submittal of DMRs that a minor modification will be required to remove this outfall from the permit prior to discontinuing the submittal of DMRs.

The permittee requested a $BOD_5$ and TSS allocation of 20 mg/L (monthly average) and 30 mg/L (daily maximum) for utility and non-categorical wastewater based on discussions with EPA and LDEQ. This request will be granted by BPJ.

The permittee's request that language be included in the draft permit allowing for an alternative procedure to continuously monitor for flow will be partially granted. A provision will be added in the Part II Conditions which allows an alternative procedure for continuous monitoring for flow. However, this provision will only apply to backup or auxilliary equipment used by the permittee to achieve compliance with the monitoring requirements for this parameter.

T. Internal Outfall 621 (2241)

The permittee requested that the monitoring frequency for flow be established at once per two (2) months. The current permit established the monitoring frequency for flow at once per day for this internal outfall. Therefore, the monitoring frequency for flow has been changed to once per week per department discretion.

U. Internal Outfall 631 (2001)

In the November 7, 2007 Application Addendum, the permittee requested that two (2) phases be added into the draft permit for shutdown of the rotary kiln and cessation of kiln discharges to the treatment system within the upcoming permit cycle. However, in a meeting on May 20, 2009, the permittee informed this Office that only Phase II would be needed since the rotary kiln has been shutdown and the kiln discharges have been eliminated. In the July 9, 2009 Application Addendum, the permittee requested that Phase III be included in the draft permit for future shutdown of the Vinyl II Plant. Under Phase III, the permittee requested that the mass limits be adjusted due to a change in flows and that the monitoring frequency for 1,2 Dichloroethane be reduced from once per week to once per year. This request has been granted; therefore, Phase II and III will be changed to reflect Phase I and II, respectively, in the draft permit.

The limits for pH have been removed from this outfall since this internal outfall discharges to a final outfall that contains limits for pH.

The permittee reviewed Appendix A and B of the OCPSF guidelines to assess the inclusion of metal bearing wastestreams at the internal outfalls that discharge OCPSF wastewaters. Based on the permittee's review, the 1,2 dichloroethane/oxychlorination of ethylene process at the Vinyl Plant was identified as a metal bearing wastestream listed for copper. According to the permittee, this wastestream and other wastestreams that contain metals are routed to the central Wastewater Treatment Plant for this outfall. Therefore, the permittee has requested that the OCPSF metal limits be applied at this outfall. However, only limits for Total Copper will be established at this internal outfall since the wastestream was identified as a metal bearing wastestream listed for copper. Mass limits and monitoring requirements for Total Copper will be established for both phases in the draft permit.

The permittee requested a $BOD_5$ and TSS allocation of 20 mg/L (monthly average) and 30 mg/L (daily maximum) for utility wastewater based on discussions with EPA and LDEQ. This request will be granted by BPJ.

The permittee requested a $BOD_5$ and TSS allocation of 30 mg/L (monthly average) and 45 mg/L (daily maximum) for sanitary wastewater based on discussions with EPA and LDEQ. This request will be granted by BPJ.

The permittee's request that language be included in the draft permit allowing for an alternative procedure to continuously monitor for flow will be partially granted. A provision will be added in the Part II Conditions which allows an alternative procedure for continuous monitoring for flow. However, this provision will only apply to backup or auxiliary equipment used by the permittee to achieve compliance with the monitoring requirements for this parameter.

V. Internal Outfall 651 (3001)

The limits for pH have been removed from this outfall since this internal outfall discharges to a final outfall that contains limits for pH.

W. Part II Conditions for implementation of 316(B) Phase II Rule requirements have been placed in the draft permit.

X. The provision in Part I of the current permit that requires the permittee to submit Discharge Monitoring Reports by the 25$^{th}$ day of the month following each reporting period will be

changed to reflect the 15th day of the month which is consistent with the DMR due date in all major permits.

Y. The site Outfall Reduction Team evaluated all internal outfalls and identified opportunities to reduce the number of internal outfalls without increasing the potential to discharge pollutants. The evaluation concluded that a significant portion of the site's discharges had redundant management requirements and were already subject to formal and informal oversight programs that provided the protection expected from an official monitoring requirement. These included internal outfalls managed under formal federal and state spill programs or discharges that already received sufficient informal monitoring during routine process activities. Other internal outfalls in the current permit are inherently free of contaminants by the nature of their use, such as discharges from site utility facilities and CWR canals. The following table lists the outfalls that are proposed for reduction (i.e. removal) from the LPDES permit. See Appendix E for the Outfall Consolidation Project which includes the proposed outfall naming system applied to the internal outfalls listed below.

**List of Internal Outfalls Identified for Reduction**

| Outfall | Reason for Reduction |
|---|---|
| 111 | Cooling water discharge will be monitored at new Outfall 401 (115). |
| 211 | Cooling water discharge and intermittent utility wastewater will be monitored at new Internal Outfall 501 (116). |
| 231 | Discharge will be routed to the central WWTP for treatment. |
| 251 | Storm water discharge will be monitored at new Internal Outfall 501 (116). |
| 331 | Cooling water and utility wastewater discharge will be monitored at new Internal Outfall 401 (115). |
| 341 | Included as part of virtual Internal Outfall 411 (301). |
| 351 | Cooling water discharge and utility wastewater will be monitored at new Internal Outfall 401 (115). |
| 361 | Cooling water discharge will be monitored at new Internal Outfall 401 (115). |
| 371 | Cooling water discharge will be monitored at new Internal Outfall 401 (115). |
| 381 | Cooling water discharge will be monitored at new Internal Outfall 401 (115). |
| 3101 | Storm water discharge will be monitored at new Internal Outfall 401 (115). |
| 3331 | Utility wastewater and stormwater discharge will be monitored at new Internal Outfall 301 (114). |
| 3351 | Stormwater discharge will be monitored at new Internal Outfall 401 (115). |
| 3361 | Stormwater discharge will be monitored at new Internal Outfall 401 (115). |
| 411 | Cooling water discharge will be monitored at new Internal Outfall 301 (114). |
| 421 | Cooling water and utility wastewater discharge will be monitored at new |

| Outfall | Reason for Reduction |
|---|---|
| | Internal Outfall 301 (114). |
| 431 | Utility wastewater discharge will be monitored at new Internal Outfall 301 (114). |
| 441 | First flush will be implemented. Post first flush stormwater will be monitored at Internal Outfall 301 (114). |
| 451 | Cooling water, stormwater, and utility wastewater discharge will be monitored at new Internal Outfall 301 (114). |
| 461 | Cooling water discharge will be monitored at new Internal Outfall 301 (114). |
| 471 | Discharge will be routed to the central WWTP for treatment. |
| 481 | Utility wastewater and storm water discharge will be monitored at new Internal Outfall 301 (114). |
| 491 | Discharge will be routed to the central WWTP for treatment. |
| 6201 | Utility wastewater discharge will be monitored at new Internal Outfall 101 (112). |
| 7401 | Utility wastewater discharge will be monitored at Outfall 001. |
| 511 | Cooling water discharge and stormwater will be monitored at new Internal Outfall 301 (114). |
| 541 | Hydrochloric acid (HCL) scrubber water discharge will be monitored at new Internal Outfall 101 (112). |
| 2911 | Utility wastewater and stormwater discharge will be monitored at new Internal Outfall 101 (112). |
| 2921 | Utility wastewater and stormwater discharge will be monitored at Outfall 001. |
| 2931 | Utility wastewater and stormwater discharge will be monitored at Outfall 001. |
| 2941 | Utility wastewater and stormwater discharge will be monitored at Outfall 001. |
| 2951 | Utility wastewater and stormwater discharge will be monitored at Outfall 001. |
| 2961 | Utility wastewater and stormwater discharge will be monitored at new Internal Outfall 101 (112). |
| 2971 | Utility wastewater and stormwater discharge will be monitored at new Internal Outfall 101 (112). |
| 711 | Cooling water discharge will be monitored at new Internal Outfall 501 (116). |
| 751 | Utility wastewater, plant wash down water, cooling water, and stormwater discharge will be monitored at new Internal Outfall 115. |
| 3911 | Storm water discharge will be monitored at new Internal Outfall 501 (116). |

| Outfall | Reason for Reduction |
|---|---|
| 811 | Cooling water discharge and post first flush stormwater will be monitored at new Internal Outfall 501 (116). First flush of storm water will be routed to the central WWTP. |
| 1011 | Cooling water discharge will be monitored at new Internal Outfall 101 (112). |
| 1031 | Included as part of virtual Internal Outfall 111 (1081) |
| 1041 | Included as part of virtual Internal Outfall 111 (1081) |
| 1051 | Included as part of virtual Internal Outfall 111 (1081) |
| 1061 | Included as part of virtual Internal Outfall 111 (1081) |
| 1071 | Included as part of virtual Internal Outfall 111 (1081) |
| 1311 | Cooling water and utility wastewater discharge will be monitored at new Internal Outfall 401 (115). |
| 1321 | Utility wastewater and storm water discharge will be monitored at new Internal Outfall 401 (115). |
| 1411 | Utility wastewater discharge will be monitored at new Internal Outfall 501 (116). |
| 1551 | Stormwater discharge will be monitored at new Internal Outfall 501 (116). |
| 1731 | Stormwater discharge will be monitored at new Internal Outfall 601 (117). |
| 1831, 1841, 1851, and 1861 | The LPDES outfalls associated with the Dowanols/Ethanolamines plant are under the operational control of INEOS, L.L.C. and are permitted under INEOS' LPDES Permit No. LA0115100, which was granted in August 2003. This transfer was discussed with Gary Aydell of LDEQ in December of 2000. These include Internal Outfalls 1831, 1841, 1851, and 1861 |
| 1901 | Utility wastewater and stormwater discharge will be monitored at new Internal Outfall 401 (115). |
| 2231 | Utility wastewater discharge will be monitored at new Internal Outfall 601 (117). |
| 4031 | Utility wastewater discharge will be monitored at new Internal Outfall 501 (116). |
| 5811 | Stormwater discharge will be monitored at new Internal Outfall 501 (116). |
| 5821 | Stormwater discharge will be monitored at new Internal Outfall 501 (116). |
| 2511 | Stormwater discharge will be monitored at new Internal Outfall 501 (116). |
| 3131 | Stormwater discharge and utility wastewater will be monitored at new Internal Outfall 601 (117). |
| 551 | Internal Outfall never existed in current permit. Included in current application, but was rerouted to the central WWTP before the final permit was issued. |

| Outfall | Reason for Reduction |
|---|---|
| 1101 | Internal Outfall never existed in current permit. Included in current application, but was rerouted to the central WWTP before the final permit was issued. |

## IX. Permit Limit Rationale:

The following section sets forth the principal facts and the significant factual, legal, methodological, and policy questions considered in preparing the draft permit. Also set forth are any calculations or other explanations of the derivation of specific effluent limitations and conditions, including a citation to the applicable effluent limitation guideline or performance standard provisions as required under LAC 33:IX.2707/40 CFR Part 122.44 and reasons why they are applicable or an explanation of how the alternate effluent limitations were developed.

A. TECHNOLOGY-BASED VERSUS WATER QUALITY STANDARDS-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Following regulations promulgated at LAC 33:IX.2707.L.2.b/40 CFR Part 122.44(l)(2)(ii), the draft permit limits are based on either technology-based effluent limits pursuant to LAC 33:IX.2707.A/40 CFR Part 122.44(a) or on State water quality standards and requirements pursuant to LAC 33:IX.2707.D/40 CFR Part 122.44(d), whichever are more stringent.

B. TECHNOLOGY-BASED EFFLUENT LIMITATIONS AND CONDITIONS

Regulations promulgated at LAC 33:IX.2707.A/40 CFR Part 122.44(a) require technology-based effluent limitations to be placed in LPDES permits based on effluent limitations guidelines where applicable, on BPJ (best professional judgement) in the absence of guidelines, or on a combination of the two. The following is a rationale for types of wastewaters. See outfall information descriptions for associated outfall(s) in Section VII.

Outfall 001

A. Type of wastewater - This final outfall consists of the discharge of CWR Canal A to the Mississippi River. CWR Canal A receives flow from Canals B, C, D, E, and F, and includes the wastewaters described in all internal outfalls within the manufacturing areas, as well as, stormwater runoff, once through cooling water, and utility wastewater flows (i.e., hydrostatic test water, hydroblast water, deluge test water, fire hydrant test water, condensate, utility discharge from turnaround activities, de-ionized (DI) water, air conditioner condensate, cooling tower blowdown, regeneration streams, water treatment discharges, steam traps, and clean equipment/slab wash down).

B. Location - At the point of discharge from the intake to the Cooling Water Return pump station prior to pumping the cooling water over the levee and into the Mississippi River at Latitude 30°18'35", Longitude 91°13'48".

C. Treatment – treatment of process wastewaters from all of the internal outfalls consists of:

- neutralization

D. Flow - Continuous Flow, 597 MGD

E. Receiving waters - Mississippi River

F. Permit Limitations – Current Permit and monitor (report) for selected groundwater constituents. See Appendix B for water quality limitation calculations for hexachlorobenzene.

Internal Outfall 101 (previously named Internal Outfall 112 in the May 2006 Application)

A. Type of wastewater - Internal Outfall 101 (112) on CWR Canal B discharge consists of cooling water returns, fire deluge water, utility wastewater, non-process area stormwater, discharges from Internal outfalls 121 (931) and 111 (1081), and discharges from neighboring company PolyOne. This internal outfall discharges to CWR Canal A and then to Outfall 001.

B. Location - At the point of discharge from the southern end of CWR Canal B, prior to mixing with other waters in CWR Canal A at Latitude 30°18'43", Longitude 91°13'59".

C. Treatment - treatment of process wastewaters consists of:
- neutralization

D. Flow - Continuous Flow, 106 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

F. Permit Limitation –

| | |
|---|---|
| TOC | 50 mg/L (Daily Maximum) |
| Oil and Grease | 15 mg/L (Daily Maximum) |

G. Basis - BPJ

Internal Outfall 111 (previously Internal Outfall 1081 in May 2006 Application)

A. Type of wastewater - This internal outfall is a virtual outfall consisting of the discharge of OCPSF process wastewater and OCPSF process area stormwater, once through cooling water, and utility wastewater from the Polyethylene A Plant. The sampling locations discharge to CWR Canal B, through Internal Outfall 101 (112), then to Outfall 001.

B. Location - Polyethylene A Plant – The virtual internal outfall coordinates are Latitude 30°18'58", Longitude 91°13'38".

Internal Outfall consists of five sampling locations. Sampling Location 1031 (North side at overflow weir), Sampling Location 1041 (Northeast side at overflow weir), Sampling Location 1051 (Middle of block at swimming pool overflow weir), Sampling Location 1061 (Southeast corner of block in concrete ditch) and Sampling Location (Middle of block at SK-120G skimmer). All are sampled before discharge from the Polyethylene A Plant in Block 8, prior to mixing with other waters in CWR Canal B.

C. Treatment - treatment of process wastewaters consists of:
- over/underflow weir (oil removal)

D. Flow - Continuous Flow, 2.0 MGD

F. Receiving waters - Mississippi River via Final Outfall 001

G. Permit Limitations – OCPSF Subparts D and J - See Appendix A for calculations.

Internal Outfall 121 (previously Internal Outfall 931)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater, OCPSF process area stormwater, once through cooling water, and utility wastewater from the Polyethylene B Plant. This internal outfall discharges to CWR Canal B, through Internal Outfall 101 (112), and then to Outfall 001.

B. Location - Polyethylene B Plant – The virtual internal outfall coordinates are Latitude 30°19'03", Longitude 91°13'38".

This internal outfall consists of two components which discharge separately at the southeast corner of the Polyethylene B Plant, just west of the fence line in Block 9, prior to mixing with other waters in CWR Canal B. Location 121A is sampled at the effluent for pit 7 and 121B is sampled on the north side of the plant at pit 32.

C. Treatment - treatment of process wastewaters consists of:
- over/underflow weir (oil removal)

D. Flow - Continuous Flow, 0.362 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

F. Permit Limitations – OCPSF Subparts D and J - See Appendix A for calculations.

Internal Outfall 201 (previously Internal Outfall 521)

A. Type of wastewater - This internal outfall consists of the discharge of non-categorical process wastewater, once through cooling water, utility wastewater, and non-process area stormwater from the Solvents/EDC I Plant. This internal outfall discharges to CWR Canal A and then to Outfall 001.

B. Location - Solvents/EDC I Plant - At the point of discharge from the Solvents/EDC I Plant TTU lined ditch, from a catwalk in the northeast corner of Block 15, prior to mixing with other waters in CWR Canal A at Latitude 30°18'52", Longitude 91°14'00".

C. Treatment - treatment of process wastewaters consists of:
- neutralization
- dechlorination

D. Flow – Continuous Flow, 2.09 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

F. Permit Limitations – Current Permit

Internal Outfall 301 (previously named Internal Outfall 114 in the May 2006 Application)

A. Type of wastewater - Internal Outfall 301 (114) on CWR Canal D discharge consists of cooling water returns, fire deluge water, utility wastewater, non-process area stormwater, post first flush OCPSF stormwater, and discharges from Internal Outfall 311 (531). This internal outfall discharges to CWR Canal A and then to Outfall 001.

B. Location - At the point of discharge from the southern end of CWR Canal D, prior to mixing with other waters in CWR Canal A at Latitude 30°18'51", Longitude 91°14'10".

C. Treatment - treatment of process wastewaters consists of:
- neutralization

D. Flow - Continuous Flow, 61.9 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

F. Permit Limitations –

| | |
|---|---|
| TOC | 50 mg/L (Daily Maximum) |
| Oil and Grease | 15 mg/L (Daily Maximum) |
| 1,2 Dichloropropane | 794 ug/L (Daily Maximum) |
| 1,2 Dichloroethane | 574 ug/L (Daily Maximum) |

G. Basis – BPJ

Internal Outfall 311 (previously Internal Outfall 531)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater, OCPSF process area stormwater, non-categorical process wastewater, recovered groundwater, once through cooling water, and utility wastewater from the Solvents/EDC I Plant. This internal outfall discharges to CWR Canal D, through Internal Outfall 301 (114), and then to Outfall 001.

B. Location - Solvents/EDC I Plant - At the point of discharge southeast of the Solvents/EDC I Plant control room (Building 1617) in Block 16, prior to mixing with other waters in CWR Canal D at Latitude 30°18'57", Longitude 91°14'03".

C. Treatment - treatment of process wastewaters consists of:
- steam stripping
- neutralization

D. Flow - Continuous Flow, 8.45 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

F. Permit Limitations – OCPSF Subparts F, G and J - See Appendix A for calculations.

Internal Outfall 401 (previously named Internal Outfall 115 in the May 2006 Application)

A. Type of wastewater - Internal Outfall 401 (115) on CWR Canal E discharge consists of cooling water returns, fire deluge water, utility wastewater, carbon bed backwash, non-process area stormwater, discharges from Internal Outfalls 421 (911) and 411 (301), and discharges from Power III. This internal outfall discharges to CWR Canal A and then to Outfall 001.

B. Location - At the point of discharge from the southern end of CWR Canal E, prior to mixing with other waters in CWR Canal A at Latitude 30°18'58", Longitude 91°14'18".

C. Treatment - treatment of process wastewaters consists of:
- neutralization

D. Flow - Continuous Flow, 143.7 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

F. Permit Limitation -

| | |
|---|---|
| TOC | 50 mg/l (Daily Maximum) |
| Oil and Grease | 15 mg/l (Daily Maximum) |

G. Basis - BPJ

Internal Outfall 411 (previously Internal Outfall 301)

A. Type of wastewater - This internal outfall is a virtual outfall consisting of the discharge of inorganic process wastewater, process area stormwater, once through cooling water, and utility wastewater from the Chlorine Plant and the discharge of inorganic process wastewater, process area stormwater, non-process area stormwater, and utility wastewater from the Caustic Plant. This internal outfall discharges to CWR Canal E, through Internal Outfall 401 (115), and then to Outfall 001.

B. Location - The virtual internal outfall coordinates are Latitude 30°19'06", Longitude 91°14'09".

Chlorine Plant – Internal Outfall consists of three components: one at the point of discharge from the 48-inch concrete trench on the east side of CWR Canal E in Block 26 and two upstream in the concrete trench for TSS sampling locations (OFT-10 and OFT-CSS). All three are prior to mixing with other waters in CWR Canal E.

Caustic Plant - Located at point of discharge from the 36-inch flume located on the south side of the caustic block, prior to mixing with other waters in CWR Canal E.

C. Treatment - treatment of process wastewaters consists of:
- neutralization

D. Flow – Continuous Flow, 20.1 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

F. Permit Limitations – Inorganic Chemicals, Subpart F - See Appendix A for calculations.

Internal Outfall 421 (previously Internal Outfall 911)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater, OCPSF process area stormwater, once through cooling water, and utility wastewater from the Polyethylene B Plant. This internal outfall discharges to CWR Canal E, through Internal Outfall 401 (115), and then to Outfall 001.

B. Location - Polyethylene B Plant – At the point of discharge from 421A (911A) located at the southwest corner of the Polyethylene B Plant, at the corner of North Canal Road and the railroad track in Block 9, prior to mixing with other waters in CWR Canal E at Latitude 30°19'09", Longitude 91°13'44".

C. Treatment - treatment of process wastewaters consists of:
- over/underflow weir (oil removal)

D. Flow - Continuous Flow, 2.55 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

F. Permit Limitations – OCPSF Subparts D and J - See Appendix A for calculations.

Internal Outfall 501 (previously named Internal Outfall 116 in the May 2006 Application)

A. Type of wastewater - Internal Outfall 501 (116) on CWR Canal A upstream of CWR of Canal E discharge consists of cooling water returns, fire deluge water, utility wastewater, non-process area stormwater, post first-flush OCPSF storm water, discharges from Internal Outfalls 541 (1531), 521 (1521), 531 (1561), 511 (2501), and 601 (117), and discharges from embedded company (INEOS). This internal outfall discharges to CWR Canal A and then to Outfall 001.

B. Location - At the point of discharge from the southwestern end of CWR Canal A prior to mixing with other waters in CWR Canal E at Latitude 30°18'58", Longitude 91°14'21".

C. Treatment - treatment of process wastewaters consists of:
- neutralization

D. Flow - Continuous Flow, 283.3 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

F. Permit Limitations -

| | |
|---|---|
| TOC | 50 mg/l (Daily Maximum) |
| Oil and Grease | 15 mg/L (Daily Maximum) |
| Benzene | 134 ug/l (Daily Maximum) |
| Ethylbenzene | 380 ug/l (Daily Maximum) |
| Methyl Chloride | 295 ug/l (Daily Maximum) |
| Toluene | 74 ug/l (Daily Maximum) |

G. Basis – BPJ

Internal Outfall 511 (previously Internal Outfall 2501)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater, OCPSF process area storm water, utility wastewater, and non-process area stormwater from the Vector SBC Plant. This internal outfall discharges to CWR Canal A, through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Vector Styrene, Butadiene, Copolymer (SBC) Plant – At the point of discharge from the weir in the concrete ditch at the northwest corner of the Vector SBC Plant in Block 43, prior to mixing with other waters in CWR Canal A at Latitude 30°19'00", Longitude 91°14'31".

C. Treatment - treatment of process wastewaters consists of:
- over/underflow weir (oil removal)
- pellet traps

D. Flow - Intermittent Flow, 0.425 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

G. Permit Limitations – OCPSF Subparts D and J

Internal Outfall 521 (previously Internal Outfall 1521)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater, OCPSF process area storm water, non-process area storm water, once through cooling water, and utility wastewater from the Chlorinated Methanes Plant. This internal outfall discharges to CWR Canal A, through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Chlorinated Methanes Plant - At the point of discharge from the North side of the sump outfall weir on the southwest side of Chlorinated Methanes Plant in Block 46, prior to mixing with other waters in CWR Canal A at Latitude 30°19'12", Longitude 91°14'28".

C. Treatment - treatment of process wastewaters consists of:
- air stripper (as needed)

D. Flow - Intermittent Flow, 1.30 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

H. Permit Limitations – OCPSF Subparts G and J

Internal Outfall 531 (previously Internal Outfall 1561)

A. Type of wastewater - This internal outfall consists of the discharge of non-categorical process wastewater (thermal treatment unit) from the Chlorinated Methanes Plant. This internal outfall discharges to CWR Canal A, through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Chlorinated Methanes Plant - At the point of discharge from the Chlorinated Methanes Plant thermal treatment unit (TTU), at the discharge piping sample point on the west side of the shot pond in Block 46, prior to mixing with other waters in CWR Canal A at Latitude 30°19'10", Longitude 91°14'24".

C. Treatment - treatment of process wastewaters consists of:
- neutralization

D. Flow - Continuous Flow, 0.334 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

F. Permit Limitation –

| | |
|---|---|
| TOC | 50 mg/l (Daily Maximum) |
| Oil and Grease | 15 mg/L (Daily Maximum) |

G. Basis – BPJ

Internal Outfall 541 (previously Internal Outfall 1531)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater from the Chlorinated Methanes Plant. This internal outfall discharges to CWR Canal A, through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Chlorinated Methanes Plant - At the point of the discharge piping sample point from the steam column, on the southwest side of Chlorinated Methanes Plant in Block 46, prior to mixing with other waters in CWR Canal A at Latitude 30°19'14", Longitude 91°14'26".

C. Treatment - treatment of process wastewaters consists of:
- steam stripper

D. Flow - Continuous Flow, 0.077 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

F. Permit Limitations – OCPSF Subparts G and J - See Appendix A for calculations.

Internal Outfall 551 (previously Internal Outfall 741)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater, OCPSF process area stormwater, once through cooling water, and utility wastewater from the LHC II Plant. This internal outfall discharges to CWR Canal F, through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Light Hydrocarbons #2 (LHC II) Plant - At the point of discharge from the LHC II Plant on the western side of Block 48, prior to mixing with other waters in CWR Canal F at Latitude 30°19'27", Longitude 91°14'15".

C. Treatment - treatment of process wastewaters consists of:
- over/underflow weir (oil removal)

D. Flow - Intermittent Flow, 0.879 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

F. Permit Limitations – OCPSF Subparts F and J

Internal Outfall 601 (previously named Internal Outfall 117 in the May 2006 Application)

A. Type of wastewater - Internal Outfall 601 (117) on CWR Canal G discharge consists of cooling water returns, fire deluge water, utility wastewater, non-process area stormwater, and discharges from Internal Outfalls 631 (2001), 641 (3121), 621 (2241), 611 (1711), 651 (3001), and 551 (741), and discharges from embedded companies Air Products and Air Liquide. This internal outfall discharges to CWR Canal F, through Internal Outfall 501 (116) and then to Outfall 001.

B. Location - At the point of discharge from the southern end of CWR Canal G, prior to mixing with other waters in CWR Canal F at Latitude 30°19'25", Longitude 91°14'22".

C. Treatment - treatment of process wastewaters consists of:
- neutralization

D. Flow - Continuous Flow, 25.9 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

F. Permit Limitation -
TOC 50 mg/l (Daily Maximum)
Oil and Grease 15 mg/L (Daily Maximum)

G. Basis – BPJ

Internal Outfall 611 (previously Internal Outfall 1711)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater, OCPSF process area stormwater, once through cooling water, and utility wastewater from the Vinyl II Plant. This internal outfall discharges to CWR Canal G, through Internal Outfall 601 (117), through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Vinyl II Plant – At the point of discharge from the ditch at the northeast corner of the Vinyl II Plant in Block 66, prior to mixing with other waters in CWR Canal G at Latitude 30°19'26", Longitude 91°14'30".

C. Treatment - treatment of process wastewaters consists of:
- steam stripper
- neutralization

D. Flow - Continuous Flow, 4.16 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

F. Permit Limitations – OCPSF Subparts F and J - See Appendix A for calculations.

Internal Outfall 621 (previously Internal Outfall 2241)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater, OCPSF process area stormwater, and utility wastewater from Light Hydrocarbons III Plant. This internal outfall discharges to CWR Canal G, through Internal Outfall 601 (117), through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Light Hydrocarbons III (LHC III) Plant – At the point of discharge from the central sump located at the southeast corner of the LHC III Plant in Block 68, prior to mixing with other waters in CWR Canal G at Latitude 30°19'30", Longitude 91°14'28".

C. Treatment - treatment of process wastewaters consists of:
- none

D. Flow - Intermittent Flow, 0.409 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

F. Permit Limitations – OCPSF Subparts F and J

Internal Outfall 631 (previously Internal Outfall 2001)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater (including wastewater from the INEOS facility), OCPSF process area stormwater, sanitary wastewater, utility wastewater, and OCPSF wastewater (landfill operations) from the Environmental Operations Plant. This internal outfall discharges to CWR Canal G, through Internal Outfall 601 (117), through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Environmental Operations – At the point of discharge from the effluent ditch associated with the Environmental Operations in Block 80, prior to mixing with other waters in CWR Canal G at Latitude 30°19'53", Longitude 91°14'22".

C. Treatment - treatment of process wastewaters consists of:
- equalization
- biological aeration
- clarification
- pH adjustment
- sludge dewatering

D. Flow - Continuous Flow, 17.9 MGD (Phase I) and 17.6 MGD (Phase II)

E. Receiving waters - Mississippi River via Final Outfall 001

F. Permit Limitations – OCPSF Subparts D, F, G, H and I - See Appendix A for calculations.

Internal Outfall 641 (previously Internal Outfall 3121)

A. Type of wastewater - This internal outfall consists of the discharge of OCPSF process wastewater, OCPSF process area stormwater, and utility wastewater from the Polyethylene C Plant. This internal outfall discharges to CWR Canal G, through Internal Outfall 601 (117), through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Polyethylene C Plant – At the point of discharge from the effluent weir at the pond located on the northern side of the Polyethylene C Plant in Block 86, prior to mixing with other waters in CWR Canal G at Latitude 30°19'38", Longitude 91°14'40".

C. Treatment - treatment of process wastewaters consists of:
- over/underflow weir (oil removal)
- pellet traps

D. Flow - Continuous Flow, 0.568 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

F. Permit Limitations – OCPSF Subparts D and J - See Appendix A for calculations.

Internal Outfall 651 (previously Internal Outfall 3001)

A. Type of wastewater - This internal outfall consists of recovered groundwater from the Northwest Landfill. This internal outfall discharges to CWR Canal G, through Internal Outfall 601 (117), through Internal Outfall 501 (116), and then to Outfall 001.

B. Location - Northwest Landfill – At the point of discharge from the pump at the Northwest Landfill on the northern side of the Polyethylene C Plant in Block 86 at the discharge piping, prior to mixing with other waters in CWR Canal G at Latitude 30°20'03", Longitude 91°15'02".

C. Treatment - treatment of process wastewaters consists of:
- carbon absorption

D. Flow - Intermittent Flow, 0.047 MGD

E. Receiving waters - Mississippi River via Final Outfall 001

F. Permit Limitations – Current Permit

Outfall 002

A. Type of wastewater - This final outfall consists of the discharge from Tank Farm Block 110 to the Mississippi River. Discharge sources include secondary containment stormwater and utility wastewater.

B. Location – Tank Farm Block 110 – At the point of discharge from the south end of the oil water separator in Tank Farm Block 110, prior to pumping the discharge over the levee and into the Mississippi River at Latitude 30°20'25", Longitude 91°14'30".

C. Treatment - treatment of clarifier underflow wastewaters consists of:
- over/underflow weir (oil removal)

D. Flow – Intermittent Flow, 0.211 MGD

E. Receiving waters - Mississippi River

F. Permit Limitations – Current Permit

Storm Water Pollution Prevention Plan (SWP3) Requirements

In accordance with LAC 33:IX.2707.I.3 and 4 [40 CFR 122.44(I)(3) and (4)], a Part II condition is proposed for applicability to all storm water discharges from the facility, either through permitted outfalls or through outfalls which are not listed in the permit or as sheet flow. **For first time permit issuance,** the Part II condition requires a Storm Water Pollution Prevention Plan (SWP3) within six (6) months of the effective date of the final permit. **For renewal permit issuance,** the Part II condition requires that the Storm Water Pollution Prevention Plan (SWP3) be reviewed and updated, if necessary, within six (6) months of the effective date of the final permit. If the permittee maintains other plans that contain duplicative information, those plans could be incorporated by reference to the SWP3. Examples of these type plans include, but are not limited to: Spill Prevention Control and Countermeasures Plan (SPCC), Best Management Plan (BMP), Response Plans, etc. The conditions will be found in the draft permit. Including Best Management Practice (BMP) controls in the form of a SWP3 is consistent with other LPDES and EPA permits regulating similar discharges of stormwater associated with industrial activity, as defined in LAC 33:IX.2522.B.14 [40 CFR 122.26(b)(14)].

C. WATER QUALITY-BASED EFFLUENT LIMITATIONS

Technology-based effluent limitations and/or specific analytical results from the permittee's application were screened against state water quality numerical standard based limits by following guidance procedures established in the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, April 16, 2008. Calculations, results, and documentation are given in Appendix B.

In accordance with LAC 33:IX.2707.D.1/40 CFR § 122.44(d)(1), the existing (or potential) discharge (s) was evaluated in accordance with the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, April 16, 2008, to determine whether pollutants would be discharged "at a level which will cause, have the

reasonable potential to cause, or contribute to an excursion above any state water quality standard." Calculations, results, and documentation are given in Appendix B.

The following pollutants received water quality based effluent limits:

| PARAMETER(S) |
| --- |
| Hexachlorobenzene (Outfall 001) |

Minimum quantification levels (MQLs) for state water quality numerical standards-based effluent limitations are set at the values listed in the Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, LDEQ, April 16, 2008. They are also listed in Part II of the permit.

**TMDL Waterbodies**

Outfalls 001 and 002

The discharges from Outfalls 001 and 002 which include treated process wastewater, non-contact cooling water, cooling tower blowdown, clarifier underflow, sanitary wastewater, and stormwater runoff flow into the Mississippi River, Subsegment No. 070301. The Mississippi River is not listed on the 2006 303(d) report for any impairments. Therefore, no additional requirements have been established for these outfalls.

**316(b) Requirements**

- July 6, 2004, EPA promulgated 'Phase II' regulations in accordance with section 316(b) of the Clean Water Act (CWA).
- January 25, 2007, the Second U.S. Circuit Court of Appeals remanded several provisions of the Phase II rule.
- March 20, 2007, EPA issued a memo saying, "the rule should be considered suspended".
- July 9, 2007, Federal Register notice suspending all parts of the Phase II regulations except 40 CFR 125.90(b) [LAC 33:IX.4731.B]

LAC 33:IX.4731.B provides for regulating the cooling water intake structure (CWIS) for existing facilities on a case-by-case basis using best professional judgment.

This facility was previously issued a number of NPDES permits and has been withdrawing once-through cooling water without any identified problems since 1958. LDEQ has no information which either identifies or verifies any past or current adverse environmental impacts associated with the withdrawal of the applicable cooling water. Based on information provided by the applicant dated April 18, 2008, the cooling water intake structure (CWIS) consists of six inlet bays and six intake pumps. The CWIS is situated immediately downstream of sheet piling installed in a "V" shape which surrounds the structure and protects it from floating debris by diverting the river flow to either side of the "V". The design capacity of the CWIS is 871 MGD (1,341 cfs) which is about 0.3% of the mean annual flow of the Mississippi River (465,000 cfs) in the vicinity of the intake. The CWIS is located approximately 300 feet offshore and about 11 feet above the stream bottom. The through-screen flow velocity is 0.4 ft/sec at average river level and 0.5 ft/sec at low river level. The CWIS has a bar screen with a screen opening size of 3.25 inches. The

intake water flows through the bar screen and is picked up in the pump suction lines and discharged over the levee to the cooling water supply canal for the facility. LDEQ has made the determination that this CWIS represents the best technology available. This determination is based on current information available and will be re-evaluated either upon promulgation of revised 316(b) Phase II regulations or upon evaluation of the environmental impacts of their CWIS as described below, whichever becomes available first. The revised 316(b) Phase II regulation will supersede any requirements contained in the applicable permit. In addition LDEQ will require an evaluation of the environmental impacts of applicable CWIS as stated in the individual permit and as described in the following paragraphs:

The permittee shall comply with effective regulations promulgated in accordance with section 316(b) of the CWA for cooling water intake structures. The permittee also must evaluate the environmental impacts of their CWIS by characterizing the fish/shellfish in the vicinity of the CWIS and assessing impingement mortality and entrainment and shall submit the assessment results to EPA and LDEQ no later than four (4) years from the effective date of this permit. Based on the information submitted to LDEQ, the permit may be reopened to incorporate limitations and/or requirements for the CWIS.

The fish/shellfish impingement mortality and entrainment assessment must include the following:

1. Source water physical data including a narrative description, scaled drawings, identification and characterization of the source water body's hydrological and geomorphological features, methods used to conduct any physical studies to determine your intake's area of influence within the water body and the results of such studies, location maps showing the physical configuration of the source water body, and other documentation which supports your assessment of the water body;

2. Cooling water intake structure data including a narrative description of the configuration, location, engineering drawings, and operation of your CWIS including design intake flow velocity, flow distribution, and water balance diagram that includes all sources of water to the facility, recirculating flows, and discharges;

3. Cooling water system data including a narrative description of the operation of your cooling water system, its relationship to the CWIS, the proportion of the design intake flow that is used in the system, the number of days of the year the cooling water system is in operation, and seasonal changes in the operation of the system, if applicable;

4. Source water biological evaluation which includes the fish/shellfish assessment and the impingement mortality/entrainment assessment; and

5. An assessment of the cooling water system which includes a discussion or description of how structural or operational actions currently in place reduce adverse environmental impacts caused by your CWIS, and a discussion of additional structural or operational actions, if any,,that have been reviewed or evaluated as possible measures to further reduce environmental impacts caused by your CWIS.

D. BIOMONITORING REQUIREMENTS

It has been determined that there may be pollutants present in the effluent which may have the potential to cause toxic conditions in the receiving stream. The State of Louisiana has established a narrative criteria which states, "toxic substances shall not be present in quantities that alone or in combination will be toxic to plant or animal life." The Office of Environmental Services requires the use of the most recent EPA biomonitoring protocols. See Appendix D for the Biomonitoring Recommendation.

Whole effluent biomonitoring is the most direct measure of potential toxicity which incorporates both the effects of synergism of effluent components and receiving stream water quality characteristics. Biomonitoring of the effluent is, therefore, required as a condition of this permit to assess potential toxicity. The biomonitoring procedures stipulated as a condition of this permit for Outfall(s) 001 are as follows:

| TOXICITY TESTS | FREQUENCY |
|---|---|
| Acute static renewal 48-hour definitive toxicity test using Daphnia pulex | 1/Quarter |
| Acute static renewal 48-hour definitive toxicity test using fathead minnow (Pimephales promelas) | 1/Quarter |

Toxicity tests shall be performed in accordance with protocols described in the latest revision of the "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms." The stipulated test species are appropriate to measure the toxicity of the effluent consistent with the requirements of the State water quality standards. The biomonitoring frequency has been established to reflect the likelihood of ambient toxicity and to provide data representative of the toxic potential of the facility's discharge in accordance with regulations promulgated at LAC 33:IX.2715/40 CFR Part 122.48.

Results of all dilutions as well as the associated chemical monitoring of pH, temperature, hardness, dissolved oxygen, conductivity, and alkalinity shall be documented in a full report according to the test method publication mentioned in the previous paragraph. The permittee shall submit a copy of the first full report to the Office of Environmental Compliance. The full report and subsequent reports are to be retained for three (3) years following the provisions of Part III.C.3 of this permit. The permit requires the submission of certain toxicity testing information as an attachment to the Discharge Monitoring Report.

This permit may be reopened to require effluent limits, additional testing, and/or other appropriate actions to address toxicity if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream or water body. Modification or revocation of the permit is subject to the provisions of LAC 33:IX.3105/40 CFR 124.5. Accelerated or intensified toxicity testing may be required in accordance with Section 308 of the Clean Water Act.

Dilution Series

The permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests. These additional effluent concentrations shall be 8%, 11%, 14%, 19%, and 26%. The low-flow effluent concentration (critical biomonitoring dilution) is defined as 19% effluent.

E. MONITORING FREQUENCIES

Regulations require permits to establish monitoring requirements to yield data representative of the monitored activity [LAC 33:IX.2715/40 CFR 122.48(b)] and to assure compliance with permit limitations [LAC 33:IX.2707.I./40 CFR 122.44(I)]. The following section(s) explain the rationale for the monitoring frequencies stated in the draft permit.

Monitoring frequency reductions were granted in accordance with the requirements stated in the USEPA Memorandum "Interim Guidance for Performance Based Reductions of NPDES Permit Monitoring Frequencies" per department discretion. See Appendix C for Monitoring frequency reductions.

Outfall 001

pH and flow - A monitoring frequency of "continuous monitoring" has been retained from the current permit.

Hexachlorobenzene - The monitoring frequency will be 1/week.

The reissued permit also requires monitoring and reporting of a number of groundwater constituents as requested by the permittee.

Internal Outfall 101 (previously named Internal Outfalls 112 in May 2006 Application)

Monitoring established at 1/Week for all parameters.

This internal outfall replaces Internal Outfalls 541, 1011, 2911, 2961, 2971, and 6201 from the current permit.

Internal Outfall 111 (previously Internal Outfall 1081 in May 2006 Application)

**Monitoring Frequency Reduction for Internal Outfall 111**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 152 | 1/Month | 2 | 1 | 1/Quarter |
| TSS | 253 | 1/Month | 16 | 6 | 1/Quarter |
| Chloroform | 0.2 | 1/Year | 0.564 | 282 | 1/Quarter |

- All other parameters were below detection and set to a frequency of 1/year.
- Proposed Internal Outfall 111 (1081) replaces current Internal Outfalls 1031, 1041, 1051, 1061, and 1071. These internal outfalls will become sampling locations. However, the sum of the loading values represented above correspond to the sum of the mass limits for $BOD_5$ and TSS at Internal Outfalls 1031, 1041, and 1051 from the current permit.

Internal Outfall 121 (previously Internal Outfall 931)

**Monitoring Frequency Reduction for Internal Outfall 121**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 30 | 1/Month | 7.67 | 25.6 | 1/Quarter |
| TSS | 51 | 1/Month | 14.4 | 28.2 | 1/Quarter |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 201 (previously Internal Outfall 521)

**Monitoring Frequency Reduction for Internal Outfall 201**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ug/l) | Monitoring Frequency | Long Term Average DMR (ug/l) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| 1,2-Dichloroethane | 574 | 1/day | 60 | 10 | 1/week |
| Tetrachloroethylene | 164 | 1/day | 76 | 46 | 1/week |

Internal Outfall 301 (previously named Internal Outfalls 114 in May 2006 Application)

Monitoring established at 1/Week for all parameters.

This internal outfall replaces Internal Outfalls 411, 421, 431, 441, 451, 461, 481, 511, and 3331 from the current permit.

Internal Outfall 311 (previously Internal Outfall 531)

**Monitoring Frequency Reduction for Internal Outfall 311**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 456 | 1/Month | 78.2 | 17.1 | 1/Quarter |
| TSS | 767 | 1/Month | 5779.3 | 753.5 | 1/Month |
| Carbon Tetrachloride | 2.12 | 1/Week | 0.75 | 35.2 | 2/Month |
| Chloroform | 1.66 | 1/Week | 1.48 | 88.9 | 1/Week |
| 1,1 Dichloroethane | 0.33 | 1/Week | 0 | 0 | 1/Month |
| 1,2 Dichloroethane | 2.69 | 1/Week | 0 | 0 | 1/Month |
| 1,2 Dichloropropane | 2.93 | 1/Week | 0 | 0 | 1/Month |
| Tetrachloroethylene | 0.78 | 1/Week | 0.044 | 5.7 | 1/Month |
| Vinyl Chloride | 1.45 | 1/Week | 0.24 | 8.2 | 1/Month |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 401 (previously named Internal Outfalls 115 in May 2006 Application)

Monitoring established at 1/Week for all parameters.

This internal outfall replaces Internal Outfalls 111, 331, 351, 361, 371, 381, 751, 1311, 1321, 1901, 3101, 3351, and 3361 from the current permit.

Internal Outfall 411 (previously Internal Outfall 301)

The monitoring frequencies for all parameters have been set to 1/month for all parameters.

This internal outfall replaces Internal Outfalls 301 and 341 from the current permit.

Internal Outfall 421 (previously Internal Outfall 911)

**Monitoring Frequency Reduction for Internal Outfall 421**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 199 | 1/Month | 6.88 | 3 | 1/Quarter |
| TSS | 331 | 1/Month | 81.4 | 25 | 1/Quarter |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 501 (previously named Internal Outfalls 116 in May 2006 Application)

Monitoring established at 1/Week for all parameters.

This internal outfall replaces Internal Outfalls 211, 251, 711, 811, 1411, 1551, 2511, 3911, 4031, 5811, and 5821 from the current permit.

Internal Outfall 511 (previously Internal Outfall 2501)

**Monitoring Frequency Reduction for Internal Outfall 511**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (mg/l) | Monitoring Frequency | Long Term Average DMR (mg/l) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 32 | 1/Month | 3 | 9 | 1/Quarter |
| TSS | 48 | 1/Month | 8 | 20 | 1/Quarter |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 521 (previously Internal Outfall 1521)

**Monitoring Frequency Reduction for Internal Outfall 521**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (mg/l) | Monitoring Frequency | Long Term Average DMR (mg/l) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 34 | 1/Month | 5 | 15 | 1/Quarter |
| TSS | 49 | 1/Month | 21 | 43 | 1/Quarter |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 531 (previously Internal Outfall 1561)

Monitoring established at 1/Month for all parameters.

Internal Outfall 541 (previously Internal Outfall 1531)

**Monitoring Frequency Reduction for Internal Outfall 541**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 23 | 1/Month | 0.536 | 2 | 1/Quarter |
| TSS | 33 | 1/Month | 0.449 | 1 | 1/Quarter |
| Chloroethane | 0.07 | 1/Week | 0.032 | 46 | 1/Month |
| Methyl Chloride | 1.11 | 1/Week | 0.0356 | 3 | 1/Month |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 551 (previously Internal Outfall 741)

**Monitoring Frequency Reduction for Internal Outfall 551**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 721 | 1/Week | 17 | 2 | 2/Month |
| TSS | 1063 | 1/Week | 682 | 64 | 2/Month |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 601 (previously named Internal Outfalls 117 in May 2006 Application)

Monitoring established at 1/Week for all parameters.

This internal outfall replaces Internal Outfalls 1731, 2231, and 3131 from the current permit.

Internal Outfall 611 (previously Internal Outfall 1711)

**Monitoring Frequency Reduction for Internal Outfall 611**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 914 | 1/Month | 274 | 30 | 1/Quarter |
| TSS | 999 | 1/Month | 267 | 27 | 1/Quarter |
| Chloroform | 2.06 | 1/Week | 0.52 | 25 | 1/Month |
| 1,2 Dichloroethane | 3.35 | 1/Week | 0.17 | 5 | 1/Month |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 621 (previously Internal Outfall 2241)

**Monitoring Frequency Reduction for Internal Outfall 621**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (mg/l) | Monitoring Frequency | Long Term Average DMR (mg/l) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 30 | 1/Month | 2 | 7 | 1/Quarter |
| TSS | 46 | 1/Month | 18 | 39 | 1/Quarter |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 631 (previously Internal Outfall 2001)

**Monitoring Frequency Reduction for Internal Outfall 631**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 5185 | 1/Day | 2530 | 49 | 3/Week |
| TSS | 7793 | 1/Day | 4382 | 56 | 4/Week |
| Chloroform | 3.42 | 2/Week | 2 | 58 | 1/Week |
| 1,2 Dichloroethane | 11.07 | 2/Week | 3.86 | 35 | 2/Month |
| 1,2 Dichloropropane | 24.92 | 2/Week | 6.87 | 28 | 2/Month |

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Parameter | Monthly Average (ppd) |
| 1,3 Dichloropropylene | 4.72 | 2/Week | 2.61 | 55 | 1/Week |
| Methyl Chloride | 14 | 2/Week | 5.56 | 40 | 2/Month |
| Methylene Chloride | 6.51 | 2/Week | 0.02 | 0 | 1/Month |

- All other parameters were below detection and set to a frequency of 1/year.
- This internal outfall replaces Internal Outfalls 231, 471, 491, and 2001 from the current permit.

Internal Outfall 641 (previously Internal Outfall 3121)

**Monitoring Frequency Reduction for Internal Outfall 641**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 52 | 1/Month | 5.5 | 10.6 | 1/Quarter |
| TSS | 86 | 1/Month | 23.7 | 27.5 | 1/Quarter |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 651 (previously Internal Outfall 3001)

**Monitoring Frequency Reduction for Internal Outfall 651**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| TOC | 55 | 1/Month | 12 | 22 | 1/Quarter |

Outfall 002

**Monitoring Frequency Reduction for Outfall 002**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| TOC | 55 | 1/Month | 6.5 | 12 | 1/Quarter |

## X. Compliance History/DMR Review:

A. COMPLIANCE ORDER & NOTICE OF POTENTIAL PENALTY WE-CN-07-0596 was issued to this permittee on February 27, 2008, for permit and effluent violations.

ADMINISTRATIVE ORDER WE-AO-09-0130 was issued to this permittee on April 24, 2009. This compliance action allowed the permittee to implement upgrades related to Internal Outfalls 531 and 1041.

B. A DMR review of the monitoring reports for the period of February 2008 through February 2009 revealed the following effluent violations:

| Date | Parameter | Outfall | Sample Value | Permit Limit |
|---|---|---|---|---|
| 05/09 | $BOD_5$ | 411A | 183 mg/L | 80 mg/L |
| 03/08 - 02/09 | Chloroform | 1031Y | 1.09 lbs/day | 0.18 lbs/day |
| 10/08 | $BOD_5$ | 1031A | 709 lbs/day | 311 lbs/day |
| 09/08 | Hexachlorobenzene | 001A | 20.96 lbs/day | 2.82 lbs/day |
| 08/08 | Hexachlorobenzene | 001A | 7.78 lbs/day | 2.82 lbs/day |
| 06/08 | Total Nickel | 301A | 204.7 lbs/day | 93.1 lbs/day |
| 06/08 | TSS | 231A | 1889 mg/L | 183 mg/L |
| 03/08 | TSS | 231A | 62 mg/L | 183 mg/L |
| 03/08 | TSS | 101A | 1736 lbs/day | 1663 lbs/day |
| 03/07 – 02/08 | Chloroform | 1031Y | 0.89 lbs/day | 0.18 lbs/day |

C. The most recent inspection was performed on June 20, 2005. All areas evaluated were found to be satisfactory with the exception of the Effluent/Receiving Waters. Specifically, the permittee's records were reviewed for the period of June 2004 through May 2005 and the following items were noted: (1) The permittee had eight daily maximum and two monthly average effluent violations; (2) The permittee failed to collect compliance samples on two occasions; and (3) The permittee had four periods of no continuous monitoring of outfall flow.

## XI. "IT" Questions - Applicant's Responses

IT Questions and Dow Chemical Corporation's responses can be found in their LPDES permit application dated May 2006.

## XII. Endangered Species:

Outfalls 001 and 002

The receiving waterbody, Subsegment No. 070301 of the Mississippi River Basin, has been identified by the U.S. Fish and Wildlife Service (FWS) as habitat for the Pallid Sturgeon, which is listed as an endangered species. This draft permit has been submitted to the FWS for review in accordance with a letter dated November 17, 2008 from Rieck (FWS) to Nolan (LDEQ). As set forth in the Memorandum of Understanding between the LDEQ and the FWS, and after consultation with FWS, LDEQ has determined that the issuance of the LPDES permit is not likely to have an adverse effect upon the Pallid Sturgeon. The effluent limitations established in the permit ensure protection of aquatic life and maintenance of the receiving water as aquatic habitat. Therefore, the issuance of the LPDES permit is not likely to have an adverse effect on any endangered or candidate species or the critical habitat.

## XIII. Historic Sites:

The discharge is from an existing facility location, which does not include an expansion on undisturbed soils. Therefore, there should be no potential effect to sites or properties on or eligible for listing on the National Register of Historic Places, and in accordance with the "Memorandum of Understanding for the Protection of Historic Properties in Louisiana Regarding LPDES Permits" no consultation with the Louisiana State Historic Preservation Officer is required.

## XIV. Tentative Determination:

On the basis of preliminary staff review, the Department of Environmental Quality has made a tentative determination to reissue a permit for the discharge described in the application.

## XV. Variances:

No requests for variances have been received by this Office.

## XVI. Public Notices:

Upon publication of the public notice, a public comment period shall begin on the date of publication and last for at least 30 days thereafter. During this period, any interested persons may submit written comments on the draft permit and may request a public hearing to clarify issues involved in the permit decision at this Office's address on the first page of the fact sheet. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing.

Public notice published in:

Local newspaper of general circulation

Office of Environmental Services Public Notice Mailing List

# Appendix A

**Internal Outfall 111 (1081)**

Proposed $BOD_5$ and TSS Permit Limits

| | | |
|---|---|---|
| OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) | 0.448 | mgd |
| **TOTAL OCPSF FLOW** | **0.448** | **mgd** |

Concentration Factors from 40 CFR 414 Subpart D

| Parameter | OCPSF Process Flow (mgd) | Concentration Factors | | Proposed OCPSF Allotment | |
|---|---|---|---|---|---|
| | | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **$BOD_5$** | 0.448 | 64 | 24 | 239 | 90 |
| **TSS** | 0.448 | 130 | 40 | 486 | 149 |

| | | |
|---|---|---|
| Utility Wastewater Average Flow | 0.014 | mgd |
| **TOTAL UTILITY AVERAGE FLOW** | **0.014** | **mgd** |

Concentration Factors from LDEQ Discussion

| Parameter | Utility Flow (mgd) | Concentration Factors | | Proposed Utility Allotment | |
|---|---|---|---|---|---|
| | | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **$BOD_5$** | 0.014 | 30 | 20 | 4 | 2 |
| **TSS** | 0.014 | 30 | 20 | 4 | 2 |

| | | |
|---|---|---|
| Once Through Cooling Water Average Flow | 1.54 | mgd |
| **TOTAL OTCW AVERAGE FLOW** | **1.54** | **mgd** |

Concentration Factors from LDEQ Discussion

| Parameter | OTCW Flow (mgd) | Concentration Factors | | Proposed Utility Allotment | |
|---|---|---|---|---|---|
| | | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **$BOD_5$** | 1.54 | 10 | 5 | 128 | 64 |
| **TSS** | 1.54 | 10 | 5 | 128 | 64 |

| Proposed Internal Outfall 111 (1081) Limits | | |
|---|---|---|
| Parameter | Daily Maximum (ppd) | Monthly Average (ppd) |
| **$BOD_5$** | 371 | 156 |
| **TSS** | 618 | 215 |

* Proposed Internal Outfall 111 (1081) replaces current Internal Outfalls 1031, 1041, 1051, 1061, and 1071. These internal outfalls will become sampling locations.

Proposed Organic Parameters Permit Limits

OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) 0.448 mgd

**TOTAL OCPSF FLOW** **0.448** **mgd**

| Parameter | OCPSF Process Wastewater Flow (mgd) | Concentration Factors | | Proposed Poly A Virtual Internal Outfall 111 (1081) Limits | |
|---|---|---|---|---|---|
| | | Maximum for Any One Day (µg/L) | Maximum for any Monthly Average (µg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **40 CFR 414 Subpart J** | | | | | |
| Acenaphthene | 0.448 | 47 | 19 | 0.176 | 0.071 |
| Acenaphthylene | 0.448 | 47 | 19 | 0.176 | 0.071 |
| Acrylonitrile | 0.448 | 232 | 94 | 0.867 | 0.351 |
| Anthracene | 0.448 | 47 | 19 | 0.176 | 0.071 |
| Benzene | 0.448 | 134 | 57 | 0.501 | 0.213 |
| Benzo(a)anthracene | 0.448 | 47 | 19 | 0.176 | 0.071 |
| 3,4-Benzofluoranthene | 0.448 | 48 | 20 | 0.179 | 0.075 |
| Benzo(k)fluoranthene | 0.448 | 47 | 19 | 0.176 | 0.071 |
| Benzo(a)pyrene | 0.448 | 48 | 20 | 0.179 | 0.075 |
| Bis(2-ethylhexyl) phthalate | 0.448 | 258 | 95 | 0.964 | 0.355 |
| Carbon Tetrachloride | 0.448 | 380 | 142 | 1.420 | 0.531 |
| Chlorobenzene | 0.448 | 380 | 142 | 1.420 | 0.531 |
| Chloroethane | 0.448 | 295 | 110 | 1.102 | 0.411 |
| Chloroform | **LIMITS CALCULATED IN SEPARATE TABLE – SEE BELOW** | | | | |
| Chrysene | 0.448 | 47 | 19 | 0.176 | 0.071 |
| Di-n-butyl phthalate | 0.448 | 43 | 20 | 0.161 | 0.075 |
| 1,2-Dichlorobenzene | 0.448 | 794 | 196 | 2.967 | 0.732 |
| 1,3-Dichlorobenzene | 0.448 | 380 | 142 | 1.420 | 0.531 |
| 1,4-Dichlorobenzene | 0.448 | 380 | 142 | 1.420 | 0.531 |
| 1,1-Dichloroethane | 0.448 | 59 | 22 | 0.220 | 0.082 |
| 1,2-Dichloroethane | 0.448 | 574 | 180 | 2.145 | 0.673 |
| 1,1-Dichloroethylene | 0.448 | 60 | 22 | 0.224 | 0.082 |
| 1,2-trans-Dichloroethylene | 0.448 | 66 | 25 | 0.247 | 0.093 |
| 1,2-Dichloropropane | 0.448 | 794 | 196 | 2.967 | 0.732 |
| 1,3-Dichloropropylene | 0.448 | 794 | 196 | 2.967 | 0.732 |
| Diethyl phthalate | 0.448 | 113 | 46 | 0.422 | 0.172 |
| 2,4-Dimethylphenol | 0.448 | 47 | 19 | 0.176 | 0.071 |
| Dimethyl phthalate | 0.448 | 47 | 19 | 0.176 | 0.071 |
| 4,6-Dinitro-o-cresol | 0.448 | 277 | 78 | 1.035 | 0.291 |
| 2,4-Dinitrophenol | 0.448 | 4,291 | 1,207 | 16.033 | 4.510 |
| Ethylbenzene | 0.448 | 380 | 142 | 1.420 | 0.531 |
| Fluoranthene | 0.448 | 54 | 22 | 0.202 | 0.082 |
| Fluorene | 0.448 | 47 | 19 | 0.176 | 0.071 |

| Parameter | OCPSF Process Wastewater Flow (mgd) | Concentration Factors: Maximum for Any One Day (µg/L) | Concentration Factors: Maximum for any Monthly Average (µg/L) | Proposed Poly A Virtual Internal Outfall 111 (1081) Limits: Daily Maximum (ppd) | Proposed Poly A Virtual Internal Outfall 111 (1081) Limits: Monthly Average (ppd) |
|---|---|---|---|---|---|
| Hexachlorobenzene | 0.448 | 794 | 196 | 2.967 | 0.732 |
| Hexachlorobutadiene | 0.448 | 380 | 142 | 1.420 | 0.531 |
| Hexachloroethane | 0.448 | 794 | 196 | 2.967 | 0.732 |
| Methyl Chloride | 0.448 | 295 | 110 | 1.102 | 0.411 |
| Methylene Chloride | 0.448 | 170 | 36 | 0.635 | 0.135 |
| Naphthalene | 0.448 | 47 | 19 | 0.176 | 0.071 |
| Nitrobenzene | 0.448 | 6,402 | 2,237 | 23.920 | 8.358 |
| 2-Nitrophenol | 0.448 | 231 | 65 | 0.863 | 0.243 |
| 4-Nitrophenol | 0.448 | 576 | 162 | 2.152 | 0.605 |
| Phenanthrene | 0.448 | 47 | 19 | 0.176 | 0.071 |
| Phenol | 0.448 | 47 | 19 | 0.176 | 0.071 |
| Pyrene | 0.448 | 48 | 20 | 0.179 | 0.075 |
| Tetrachloroethylene | 0.448 | 164 | 52 | 0.613 | 0.194 |
| Toluene | 0.448 | 74 | 28 | 0.276 | 0.105 |
| 1,2,4-Trichlorobenzene | 0.448 | 794 | 196 | 2.967 | 0.732 |
| 1,1,1-Trichloroethane | 0.448 | 59 | 22 | 0.220 | 0.082 |
| 1,1,2-Trichloroethane | 0.448 | 127 | 32 | 0.475 | 0.120 |
| Trichloroethylene | 0.448 | 69 | 26 | 0.258 | 0.097 |
| Vinyl Chloride | 0.448 | 172 | 97 | 0.643 | 0.362 |

Proposed Chloroform Permit Limits (Based on BPJ)

| | | |
|---|---|---|
| OCPSF Wastewater Average Flow (Maximum 30-Day Monthy Average) | 0.448 | mgd |
| Cooling Water Average Flow | 1.54 | mgd |

Concentration factors from 40 CFR 414 Subpart J

| Parameter | OCPSF Process Flow (mgd) | Concentration Factors: Daily Maximum (mg/L) | Concentration Factors: Monthly Average (mg/L) | Proposed OCPSF Allotment: Daily Maximum (ppd) | Proposed OCPSF Allotment: Monthly Average (ppd) |
|---|---|---|---|---|---|
| **Chloroform** | 0.448 | 0.325 | 0.111 | 1.21 | 0.42 |

Concentration factors from 40 CFR 414 Subpart J

| Parameter | OTCW Flow (mgd) | Concentration Factors: Daily Maximum (mg/L) | Concentration Factors: Monthly Average (mg/L) | Proposed OCPSF Allotment: Daily Maximum (ppd) | Proposed OCPSF Allotment: Monthly Average (ppd) |
|---|---|---|---|---|---|
| **Chloroform** | 1.54 | 0.325 | 0.111 | 4.17 | 1.43 |

| Proposed Internal Outfall 111 (1081) Limits | | |
|---|---|---|
| **Parameter** | **Daily Maximum (ppd)** | **Monthly Average (ppd)** |
| **Chloroform** | 5.38 | 1.85 |

**Internal Outfall 121 (931)**

Proposed $BOD_5$ and TSS Permit Limits

OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) 0.182 mgd
**TOTAL OCPSF FLOW** **0.182** **mgd**

Concentration Factors from 40 CFR 414 Subpart D

| | | Concentration Factors | | Proposed Permit Limits | |
|---|---|---|---|---|---|
| **Parameter** | **OCPSF Process Flow (mgd)** | **Daily Maximum (mg/L)** | **Monthly Average (mg/L)** | **Daily Maximum (ppd)** | **Monthly Average (ppd)** |
| **$BOD_5$** | 0.182 | 64 | 24 | 97 | 36 |
| **TSS** | 0.182 | 130 | 40 | 197 | 61 |

Utility Wastewater Flow 0.161 mgd
**TOTAL UTILITY AVERAGE FLOW** **0.161** **mgd**

Concentration Factors from LDEQ Discussion

| | | Concentration Factors | | Proposed Non-OCPSF Allotment | |
|---|---|---|---|---|---|
| **Parameter** | **Utility Flow (mgd)** | **Daily Maximum (mg/L)** | **Monthly Average (mg/L)** | **Daily Maximum (ppd)** | **Monthly Average (ppd)** |
| **$BOD_5$** | 0.161 | 30 | 20 | 40 | 27 |
| **TSS** | 0.161 | 30 | 20 | 40 | 27 |

| Proposed Internal Outfall 121 (931) Limits | | |
|---|---|---|
| **Parameter** | **Monthly Average (ppd)** | **Daily Maximum (ppd)** |
| **$BOD_5$** | 63 | 137 |
| **TSS** | 88 | 237 |

Proposed Organic Parameters Permit Limits

OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) 0.182 mgd
**TOTAL OCPSF FLOW** **0.182** **mgd**

| Parameter | OCPSF Process Wastewater Flow (mgd) | Concentration Factors | | Proposed Internal Outfall 121 (931) Limits | |
|---|---|---|---|---|---|
| | | Maximum for Any One Day (µg/L) | Maximum for any Monthly Average (µg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **40 CFR 414 Subpart J** | | | | | |
| Acenaphthene | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Acenaphthylene | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Acrylonitrile | 0.182 | 232 | 94 | 0.352 | 0.143 |
| Anthracene | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Benzene | 0.182 | 134 | 57 | 0.203 | 0.087 |
| Benzo(a)anthracene | 0.182 | 47 | 19 | 0.071 | 0.029 |
| 3,4-Benzofluoranthene | 0.182 | 48 | 20 | 0.073 | 0.030 |
| Benzo(k)fluoranthene | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Benzo(a)pyrene | 0.182 | 48 | 20 | 0.073 | 0.030 |
| Bis(2-ethylhexyl) phthalate | 0.182 | 258 | 95 | 0.392 | 0.144 |
| Carbon Tetrachloride | 0.182 | 380 | 142 | 0.577 | 0.216 |
| Chlorobenzene | 0.182 | 380 | 142 | 0.577 | 0.216 |
| Chloroethane | 0.182 | 295 | 110 | 0.448 | 0.167 |
| Chloroform | 0.182 | 325 | 111 | 0.493 | 0.168 |
| Chrysene | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Di-n-butyl phthalate | 0.182 | 43 | 20 | 0.065 | 0.030 |
| 1,2-Dichlorobenzene | 0.182 | 794 | 196 | 1.21 | 0.298 |
| 1,3-Dichlorobenzene | 0.182 | 380 | 142 | 0.577 | 0.216 |
| 1,4-Dichlorobenzene | 0.182 | 380 | 142 | 0.577 | 0.216 |
| 1,1-Dichloroethane | 0.182 | 59 | 22 | 0.090 | 0.033 |
| 1,2-Dichloroethane | 0.182 | 574 | 180 | 0.871 | 0.273 |
| 1,1-Dichloroethylene | 0.182 | 60 | 22 | 0.091 | 0.033 |
| 1,2-trans-Dichloroethylene | 0.182 | 66 | 25 | 0.100 | 0.038 |
| 1,2-Dichloropropane | 0.182 | 794 | 196 | 1.21 | 0.298 |
| 1,3-Dichloropropylene | 0.182 | 794 | 196 | 1.21 | 0.298 |
| Diethyl phthalate | 0.182 | 113 | 46 | 0.172 | 0.070 |
| 2,4-Dimethylphenol | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Dimethyl phthalate | 0.182 | 47 | 19 | 0.071 | 0.029 |
| 4,6-Dinitro-o-cresol | 0.182 | 277 | 78 | 0.420 | 0.118 |
| 2,4-Dinitrophenol | 0.182 | 4,291 | 1,207 | 6.51 | 1.83 |
| Ethylbenzene | 0.182 | 380 | 142 | 0.577 | 0.216 |
| Fluoranthene | 0.182 | 54 | 22 | 0.082 | 0.033 |
| Fluorene | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Hexachlorobenzene | 0.182 | 794 | 196 | 1.21 | 0.298 |
| Hexachlorobutadiene | 0.182 | 380 | 142 | 0.577 | 0.216 |
| Hexachloroethane | 0.182 | 794 | 196 | 1.21 | 0.298 |
| Methyl Chloride | 0.182 | 295 | 110 | 0.448 | 0.167 |
| Methylene Chloride | 0.182 | 170 | 36 | 0.258 | 0.055 |
| Naphthalene | 0.182 | 47 | 19 | 0.071 | 0.029 |

| Parameter | OCPSF Process Wastewater Flow (mgd) | Concentration Factors | | Proposed Internal Outfall 121 (931) Limits | |
|---|---|---|---|---|---|
| | | Maximum for Any One Day (µg/L) | Maximum for any Monthly Average (µg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| Nitrobenzene | 0.182 | 6,402 | 2,237 | 9.72 | 3.40 |
| 2-Nitrophenol | 0.182 | 231 | 65 | 0.351 | 0.099 |
| 4-Nitrophenol | 0.182 | 576 | 162 | 0.874 | 0.246 |
| Phenanthrene | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Phenol | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Pyrene | 0.182 | 48 | 20 | 0.073 | 0.030 |
| Tetrachloroethylene | 0.182 | 164 | 52 | 0.249 | 0.079 |
| Toluene | 0.182 | 74 | 28 | 0.112 | 0.043 |
| 1,2,4-Trichlorobenzene | 0.182 | 794 | 196 | 1.21 | 0.298 |
| 1,1,1-Trichloroethane | 0.182 | 59 | 22 | 0.090 | 0.033 |
| 1,1,2-Trichloroethane | 0.182 | 127 | 32 | 0.193 | 0.049 |
| Trichloroethylene | 0.182 | 69 | 26 | 0.105 | 0.039 |
| Vinyl Chloride | 0.182 | 172 | 97 | 0.261 | 0.147 |

**Internal Outfall 311 (531) – Phase I**

Proposed $BOD_5$ and TSS Permit Limits

| | | |
|---|---|---|
| OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) | 3.38 | mgd |
| **TOTAL OCPSF FLOW** | 3.38 | mgd |

Concentration Factors from 40 CFR 414 Subpart F

| Production Percentage from Subpart F | 78% | Concentration Factors | | Proposed OCPSF Allotment | |
|---|---|---|---|---|---|
| Parameter | OCPSF Process Flow (mgd) | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| $BOD_5$ | 2.64 | 80 | 30 | 1,761 | 661 |
| TSS | 2.64 | 149 | 46 | 3,281 | 1,013 |

Concentration Factors from 40 CFR 414 Subpart G

| Production Percentage from Subpart G | 22% | Concentration Factors | | Proposed OCPSF Allotment | |
|---|---|---|---|---|---|
| Parameter | OCPSF Process Flow (mgd) | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| $BOD_5$ | 0.744 | 92 | 34 | 571 | 211 |
| TSS | 0.744 | 159 | 49 | 987 | 304 |

| | | |
|---|---|---|
| Non-Categorical Wastewater Flow | 0.072 | mgd |
| **TOTAL NON-OCPSF WW AVERAGE FLOW** | 0.072 | mgd |

| | | Concentration Factors | | Proposed Non-OCPSF Allotment | |
|---|---|---|---|---|---|
| Parameter | Total Non-OCPSF WW Flow (mgd) | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| $BOD_5$ | 0.072 | 30 | 20 | 18 | 12 |
| TSS | 0.072 | 30 | 20 | 18 | 12 |

| | | |
|---|---|---|
| OTCW Average Flow | 5.07 | mgd |
| **TOTAL OTCW AVERAGE FLOW** | 5.07 | mgd |

Concentration Factors for $BOD_5$ based on LDEQ Discussion

| | | Concentration Factors | | Proposed Non-OCPSF Allotment | |
|---|---|---|---|---|---|
| Parameter | OTCW Flow (mgd) | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| $BOD_5$ | 5.07 | 10 | 5 | 423 | 211 |

| Proposed Internal Outfall 311 (531) Limits - Phase I | | |
|---|---|---|
| Parameter | Daily Maximum (ppd) | Monthly Average (ppd) |
| $BOD_5$ | 2,773 | 1,095 |
| TSS | 4,286 | 1,329 |

**Internal Outfall 311 (531) – Phase II**

Proposed $BOD_5$ and TSS Permit Limits

| | | |
|---|---|---|
| OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) | 3.38 | mgd |
| **TOTAL OCPSF FLOW** | 3.38 | mgd |

Concentration Factors from 40 CFR 414 Subpart G

| **Production Percentage from Subpart G** | **100%** | **Concentration Factors** | | **Proposed OCPSF Allotment** | |
|---|---|---|---|---|---|
| **Parameter** | **OCPSF Process Flow (mgd)** | **Daily Maximum (mg/L)** | **Monthly Average (mg/L)** | **Daily Maximum (ppd)** | **Monthly Average (ppd)** |
| $BOD_5$ | 3.38 | 92 | 34 | 2,593 | 958 |
| TSS | 3.38 | 159 | 49 | 4,482 | 1,381 |

| | | |
|---|---|---|
| Non-Categorical Wastewater Flow | 0.072 | mgd |
| **TOTAL NON-OCPSF WW AVERAGE FLOW** | 0.072 | mgd |

| | | **Concentration Factors** | | **Proposed Non-OCPSF Allotment** | |
|---|---|---|---|---|---|
| **Parameter** | **Total Non-OCPSF WW Flow (mgd)** | **Daily Maximum (mg/L)** | **Monthly Average (mg/L)** | **Daily Maximum (ppd)** | **Monthly Average (ppd)** |
| $BOD_5$ | 0.072 | 30 | 20 | 18 | 12 |
| TSS | 0.072 | 30 | 20 | 18 | 12 |

| | | |
|---|---|---|
| OTCW Average Flow | 5.07 | mgd |
| **TOTAL OTCW AVERAGE FLOW** | 5.07 | mgd |

Concentration Factors for $BOD_5$ based on LDEQ Discussion

| | | **Concentration Factors** | | **Proposed Non-OCPSF Allotment** | |
|---|---|---|---|---|---|
| **Parameter** | **OTCW Flow (mgd)** | **Daily Maximum (mg/L)** | **Monthly Average (mg/L)** | **Daily Maximum (ppd)** | **Monthly Average (ppd)** |
| $BOD_5$ | 5.07 | 10 | 5 | 423 | 211 |

| Proposed Internal Outfall 311 (531) Limits – Phase II | | |
|---|---|---|
| **Parameter** | **Daily Maximum (ppd)** | **Monthly Average (ppd)** |
| $BOD_5$ | 3,034 | 1,181 |
| TSS | 4,500 | 1,393 |

Proposed Organic Parameters Permit Limits for Phases I and II

| | | |
|---|---|---|
| OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) | 3.38 | mgd |
| **TOTAL OCPSF FLOW** | **3.38** | **mgd** |

| | | Concentration Factors | | Proposed Internal Outfall 311 (531) Limits | |
|---|---|---|---|---|---|
| **Parameter** | **OCPSF Process Wastewater Flow (mgd)** | **Maximum for Any One Day (µg/L)** | **Maximum for any Monthly Average (µg/L)** | **Daily Maximum (ppd)** | **Monthly Average (ppd)** |
| **40 CFR 414.100 Subpart J** | | | | | |
| Acenaphthene | 3.38 | 47 | 19 | 1.32 | 0.536 |
| Acenaphthylene | 3.38 | 47 | 19 | 1.32 | 0.536 |
| Acrylonitrile | 3.38 | 232 | 94 | 6.54 | 2.65 |
| Anthracene | 3.38 | 47 | 19 | 1.32 | 0.536 |
| Benzene | 3.38 | 134 | 57 | 3.78 | 1.61 |
| Benzo(a)anthracene | 3.38 | 47 | 19 | 1.32 | 0.536 |
| 3,4-Benzofluoranthene | 3.38 | 48 | 20 | 1.35 | 0.564 |
| Benzo(k)fluoranthene | 3.38 | 47 | 19 | 1.32 | 0.536 |
| Benzo(a)pyrene | 3.38 | 48 | 20 | 1.35 | 0.564 |
| Bis(2-ethylhexyl) phthalate | 3.38 | 258 | 95 | 7.27 | 2.68 |
| Carbon Tetrachloride | 3.38 | 380 | 142 | 10.71 | 4.00 |
| Chlorobenzene | 3.38 | 380 | 142 | 10.71 | 4.00 |
| Chloroethane | 3.38 | 295 | 110 | 8.32 | 3.10 |
| Chloroform | 3.38 | 325 | 111 | 9.16 | 3.13 |
| Chrysene | 3.38 | 47 | 19 | 1.32 | 0.536 |
| Di-n-butyl phthalate | 3.38 | 43 | 20 | 1.21 | 0.564 |
| 1,2-Dichlorobenzene | 3.38 | 794 | 196 | 22.38 | 5.53 |
| 1,3-Dichlorobenzene | 3.38 | 380 | 142 | 10.71 | 4.00 |
| 1,4-Dichlorobenzene | 3.38 | 380 | 142 | 10.71 | 4.00 |
| 1,1-Dichloroethane | 3.38 | 59 | 22 | 1.66 | 0.620 |
| 1,2-Dichloroethane | 3.38 | 574 | 180 | 16.18 | 5.07 |
| 1,1-Dichloroethylene | 3.38 | 60 | 22 | 1.69 | 0.620 |
| 1,2-trans-Dichloroethylene | 3.38 | 66 | 25 | 1.86 | 0.705 |
| 1,2-Dichloropropane | 3.38 | 794 | 196 | 22.38 | 5.53 |

| Parameter | OCPSF Process Wastewater Flow (mgd) | Concentration Factors | | Proposed Internal Outfall 311 (531) Limits | |
|---|---|---|---|---|---|
| | | Maximum for Any One Day (µg/L) | Maximum for any Monthly Average (µg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| 1,3-Dichloropropylene | 3.38 | 794 | 196 | 22.38 | 5.53 |
| Diethyl phthalate | 3.38 | 113 | 46 | 3.19 | 1.30 |
| 2,4-Dimethylphenol | 3.38 | 47 | 19 | 1.32 | 0.536 |
| Dimethyl phthalate | 3.38 | 47 | 19 | 1.32 | 0.536 |
| 4,6-Dinitro-o-cresol | 3.38 | 277 | 78 | 7.81 | 2.20 |
| 2,4-Dinitrophenol | 3.38 | 4,291 | 1,207 | 120.96 | 34.02 |
| Ethylbenzene | 3.38 | 380 | 142 | 10.71 | 4.00 |
| Fluoranthene | 3.38 | 54 | 22 | 1.52 | 0.620 |
| Fluorene | 3.38 | 47 | 19 | 1.32 | 0.536 |
| Hexachlorobenzene | 3.38 | 794 | 196 | 22.38 | 5.53 |
| Hexachlorobutadiene | 3.38 | 380 | 142 | 10.71 | 4.003 |
| Hexachloroethane | 3.38 | 794 | 196 | 22.38 | 5.525 |
| Methyl Chloride | 3.38 | 295 | 110 | 8.32 | 3.10 |
| Methylene Chloride | 3.38 | 170 | 36 | 4.79 | 1.01 |
| Naphthalene | 3.38 | 47 | 19 | 1.32 | 0.536 |
| Nitrobenzene | 3.38 | 6,402 | 2,237 | 180.47 | 63.06 |
| 2-Nitrophenol | 3.38 | 231 | 65 | 6.51 | 1.83 |
| 4-Nitrophenol | 3.38 | 576 | 162 | 16.24 | 4.57 |
| Phenanthrene | 3.38 | 47 | 19 | 1.32 | 0.536 |
| Phenol | 3.38 | 47 | 19 | 1.32 | 0.536 |
| Pyrene | 3.38 | 48 | 20 | 1.35 | 0.564 |
| Tetrachloroethylene | 3.38 | 164 | 52 | 4.62 | 1.47 |
| Toluene | 3.38 | 74 | 28 | 2.09 | 0.789 |
| 1,2,4-Trichlorobenzene | 3.38 | 794 | 196 | 22.38 | 5.53 |
| 1,1,1-Trichloroethane | 3.38 | 59 | 22 | 1.66 | 0.620 |
| 1,1,2-Trichloroethane | 3.38 | 127 | 32 | 3.58 | 0.902 |
| Trichloroethylene | 3.38 | 69 | 26 | 1.95 | 0.733 |
| Vinyl Chloride | 3.38 | 172 | 97 | 4.85 | 2.73 |

**Internal Outfall 411 (301 – Summation of Sampling Locations 321 AND 341)**

CALCULATION OF TECHNOLOGY-BASED EFFLUENT LIMITATIONS

CHLORINE PRODUCTION RATES

| | CHLORINE PRODUCTION K LB/DAY |
|---|---|
| CHLOR-ALKALI | |
| Diaphragm Cell | 7000 |

Conventional Pollutant Guideline Factor 40 CFR 415.62(b)
Nonconventional Pollutant Guideline Factor 40 CFR 415.63(b)
Guideline Factor [GLF] = [Pound Pollutant per K lb/day Production]
Chlorine Production [CLP] = (K lb/day)
Mass (lb/day) = Production (K lb/day) * GLF

CALCULATE CONVENTIONAL POLLUTANT MASS LIMITS (TSS)

Conventional Pollutant Guideline Factor 40 CFR 415.62(b)
Nonconventional Pollutant Guideline Factor 40 CFR 415.63(b)

| Parameter | CLP | DAILY AVG GLF | DAILY MAX GLF | DAILY AVG LB/DAY | DAILY MAX LB/DAY |
|---|---|---|---|---|---|
| TSS | 7000 | 0.51 | 1.1 | 3570 | 7700 |
| Total Residual Chlorine | 7000 | 0.0079 | 0.013 | 55.3 | 91 |
| Total Copper | 7000 | 0.0049 | 0.012 | 34.3 | 84 |
| Total Lead | 7000 | 0.0024 | 0.0059 | 16.8 | 41.3 |
| Total Nickel | 7000 | 0.0037 | 0.0097 | 25.9 | 67.9 |

SUMMARIZE PERMIT LIMITS

| CONVENTIONAL | DAILY AVG LB/DAY | DAILY MAX LB/DAY |
|---|---|---|
| TSS | 3570 | 7700 |
| NONCONVENTIONAL | | |
| Chlorine (Total Residual) | 55.3 | 91 |
| METALS | | |
| Copper (Total) | 34.3 | 84 |
| Lead (Total) | 16.8 | 41.3 |
| Nickel (Total) | 25.9 | 67.9 |

**Internal Outfall 421 (911)**

Proposed $BOD_5$ and TSS Permit Limits

| | | |
|---|---|---|
| OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) | 0.33 | mgd |
| Non-Contact Stormwater Average Flow (Maximum 30-Day Monthly Average | 0.05 | mgd |

Concentration Factors from 40 CFR 414 Subpart D

| Parameter | OCPSF Process Flow (mgd) | Concentration Factors: Daily Maximum (mg/L) | Concentration Factors: Monthly Average (mg/L) | Proposed Permit Limits: Daily Maximum (ppd) | Proposed Permit Limits: Monthly Average (ppd) |
|---|---|---|---|---|---|
| $BOD_5$ | 0.33 | 64 | 24 | 176 | 66 |
| TSS | 0.33 | 130 | 40 | 358 | 110 |

| Parameter | Non-Contact Stormwater Flow (mgd) | Concentration Factors: Daily Maximum (mg/L) | Concentration Factors: Monthly Average (mg/L) | Proposed Permit Limits: Daily Maximum (ppd) | Proposed Permit Limits: Monthly Average (ppd) |
|---|---|---|---|---|---|
| $BOD_5$ | 0.05 | 20 | 10 | 8 | 4 |
| TSS | 0.05 | 20 | 10 | 8 | 4 |

| | | |
|---|---|---|
| OTCW Average Flow | 0.69 | mgd |
| **TOTAL OTCW AVERAGE FLOW** | 0.69 | mgd |

Concentration Factors based on LDEQ Discussion

| Parameter | Total OTCW Flow (mgd) | Concentration Factors: Daily Maximum (mg/L) | Concentration Factors: Monthly Average (mg/L) | Proposed Non-OCPSF Allotment: Daily Maximum (ppd) | Proposed Non-OCPSF Allotment: Monthly Average (ppd) |
|---|---|---|---|---|---|
| $BOD_5$ | 0.69 | 10 | 5 | 58 | 29 |

| Proposed Internal Outfall 421 (911) Limits | | |
|---|---|---|
| **Parameter** | **Daily Maximum (ppd)** | **Monthly Average (ppd)** |
| $BOD_5$ | 242 | 99 |
| TSS* | 366 | 114 |

Proposed Organic Parameters Permit Limits

| | | |
|---|---|---|
| OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) | 0.33 | mgd |
| **TOTAL OCPSF FLOW** | **0.33** | **mgd** |

| Parameter | OCPSF Process Wastewater Flow (mgd) | Concentration Factors: Maximum for Any One Day (µg/L) | Concentration Factors: Maximum for any Monthly Average (µg/L) | Proposed Internal Outfall 421 (911) Limits: Daily Maximum (ppd) | Proposed Internal Outfall 421 (911) Limits: Monthly Average (ppd) |
|---|---|---|---|---|---|
| **40 CFR 414 Subpart J** | | | | | |
| Acenaphthene | 0.33 | 47 | 19 | 0.129 | 0.052 |
| Acenaphthylene | 0.33 | 47 | 19 | 0.129 | 0.052 |
| Acrylonitrile | 0.33 | 232 | 94 | 0.64 | 0.26 |
| Anthracene | 0.33 | 47 | 19 | 0.129 | 0.052 |
| Benzene | 0.33 | 134 | 57 | 0.37 | 0.157 |

| Parameter | OCPSF Process Wastewater Flow (mgd) | Concentration Factors | | Proposed Internal Outfall 421 (911) Limits | |
|---|---|---|---|---|---|
| | | Maximum for Any One Day (µg/L) | Maximum for any Monthly Average (µg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| Benzo(a)anthracene | 0.33 | 47 | 19 | 0.129 | 0.052 |
| 3,4-Benzofluoranthene | 0.33 | 48 | 20 | 0.132 | 0.055 |
| Benzo(k)fluoranthene | 0.33 | 47 | 19 | 0.129 | 0.052 |
| Benzo(a)pyrene | 0.33 | 48 | 20 | 0.132 | 0.055 |
| Bis(2-ethylhexyl) phthalate | 0.33 | 258 | 95 | 0.71 | 0.26 |
| Carbon Tetrachloride | 0.33 | 380 | 142 | 1.05 | 0.39 |
| Chlorobenzene | 0.33 | 380 | 142 | 1.05 | 0.39 |
| Chloroethane | 0.33 | 295 | 110 | 0.81 | 0.30 |
| Chloroform | **LIMITS CALCULATED IN A SEPARATE TABLE – SEE BELOW** | | | | |
| Chrysene | 0.33 | 47 | 19 | 0.129 | 0.052 |
| Di-n-butyl phthalate | 0.33 | 43 | 20 | 0.118 | 0.055 |
| 1,2-Dichlorobenzene | 0.33 | 794 | 196 | 2.2 | 0.54 |
| 1,3-Dichlorobenzene | 0.33 | 380 | 142 | 1.05 | 0.39 |
| 1,4-Dichlorobenzene | 0.33 | 380 | 142 | 1.05 | 0.39 |
| 1,1-Dichloroethane | 0.33 | 59 | 22 | 0.162 | 0.061 |
| 1,2-Dichloroethane | 0.33 | 574 | 180 | 1.58 | 0.50 |
| 1,1-Dichloroethylene | 0.33 | 60 | 22 | 0.165 | 0.061 |
| 1,2-trans-Dichloroethylene | 0.33 | 66 | 25 | 0.18 | 0.069 |
| 1,2-Dichloropropane | 0.33 | 794 | 196 | 2.2 | 0.54 |
| 1,3-Dichloropropylene | 0.33 | 794 | 196 | 2.2 | 0.54 |
| Diethyl phthalate | 0.33 | 113 | 46 | 0.31 | 0.127 |
| 2,4-Dimethylphenol | 0.33 | 47 | 19 | 0.129 | 0.052 |
| Dimethyl phthalate | 0.33 | 47 | 19 | 0.129 | 0.052 |
| 4,6-Dinitro-o-cresol | 0.33 | 277 | 78 | 0.76 | 0.21 |
| 2,4-Dinitrophenol | 0.33 | 4,291 | 1,207 | 11.8 | 3.3 |
| Ethylbenzene | 0.33 | 380 | 142 | 1.05 | 0.39 |
| Fluoranthene | 0.33 | 54 | 22 | 0.149 | 0.061 |
| Fluorene | 0.33 | 47 | 19 | 0.129 | 0.052 |
| Hexachlorobenzene | 0.33 | 794 | 196 | 2.2 | 0.54 |
| Hexachlorobutadiene | 0.33 | 380 | 142 | 1.05 | 0.39 |
| Hexachloroethane | 0.33 | 794 | 196 | 2.2 | 0.54 |
| Methyl Chloride | 0.33 | 295 | 110 | 0.81 | 0.30 |
| Methylene Chloride | 0.33 | 170 | 36 | 0.47 | 0.099 |
| Naphthalene | 0.33 | 47 | 19 | 0.129 | 0.052 |
| Nitrobenzene | 0.33 | 6,402 | 2,237 | 17.6 | 6.2 |
| 2-Nitrophenol | 0.33 | 231 | 65 | 0.64 | 0.18 |
| 4-Nitrophenol | 0.33 | 576 | 162 | 1.59 | 0.45 |
| Phenanthrene | 0.33 | 47 | 19 | 0.129 | 0.052 |
| Phenol | 0.33 | 47 | 19 | 0.129 | 0.052 |
| Pyrene | 0.33 | 48 | 20 | 0.132 | 0.055 |
| Tetrachloroethylene | 0.33 | 164 | 52 | 0.45 | 0.143 |

| Parameter | OCPSF Process Wastewater Flow (mgd) | Concentration Factors | | Proposed Internal Outfall 421 (911) Limits | |
|---|---|---|---|---|---|
| | | Maximum for Any One Day (µg/L) | Maximum for any Monthly Average (µg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| Toluene | 0.33 | 74 | 28 | 0.20 | 0.077 |
| 1,2,4-Trichlorobenzene | 0.33 | 794 | 196 | 2.2 | 0.54 |
| 1,1,1-Trichloroethane | 0.33 | 59 | 22 | 0.162 | 0.061 |
| 1,1,2-Trichloroethane | 0.33 | 127 | 32 | 0.35 | 0.088 |
| Trichloroethylene | 0.33 | 69 | 26 | 0.19 | 0.072 |
| Vinyl Chloride | 0.33 | 172 | 97 | 0.47 | 0.27 |

Proposed Chloroform Permit Limits (Based on BPJ)

OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) 0.33 mgd

Cooling Water Average Flow 0.69 mgd

Concentration factors from 40 CFR 414 Subpart J

| Parameter | OCPSF Process Flow (mgd) | Concentration Factors | | Proposed OCPSF Allotment | |
|---|---|---|---|---|---|
| | | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **Chloroform** | 0.33 | 0.325 | 0.111 | 0.89 | 0.31 |

Concentration factors from 40 CFR 414 Subpart J

| Parameter | OTCW Flow (mgd) | Concentration Factors | | Proposed OCPSF Allotment | |
|---|---|---|---|---|---|
| | | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **Chloroform** | 0.69 | 0.325 | 0.111 | 1.87 | 0.64 |

| Proposed Internal Outfall 421 (911) Limits | | |
|---|---|---|
| Parameter | Daily Maximum (ppd) | Monthly Average (ppd) |
| **Chloroform** | 2.76 | 0.95 |

**Internal Outfall 541 ( 1531)**

Proposed $BOD_5$ and TSS Permit Limits

OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) 0.080 mgd

**TOTAL OCPSF FLOW** **0.080** **mgd**

Concentration Factors from 40 CFR 414 Subpart G

| Parameter | OCPSF Process Flow (mgd) | Concentration Factors | | Proposed Permit Limits | |
|---|---|---|---|---|---|
| | | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **$BOD_5$** | 0.080 | 92 | 34 | 61 | 23 |
| **TSS** | 0.080 | 159 | 49 | 106 | 33 |

Proposed Organic Parameters Permit Limits

OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) 0.080 mgd

**TOTAL OCPSF FLOW** **0.080 mgd**

| Parameter | OCPSF Process Wastewater Flow (mgd) | Concentration Factors | | Proposed Internal Outfall 541 (1531) Limits | |
|---|---|---|---|---|---|
| | | Maximum for Any One Day (µg/L) | Maximum for any Monthly Average (µg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **40 CFR 414 Subpart J** | | | | | |
| Acenaphthene | 0.080 | 47 | 19 | 0.031 | 0.013 |
| Acenaphthylene | 0.080 | 47 | 19 | 0.031 | 0.013 |
| Acrylonitrile | 0.080 | 232 | 94 | 0.155 | 0.063 |
| Anthracene | 0.080 | 47 | 19 | 0.031 | 0.013 |
| Benzene | 0.080 | 134 | 57 | 0.089 | 0.038 |
| Benzo(a)anthracene | 0.080 | 47 | 19 | 0.031 | 0.013 |
| 3,4-Benzofluoranthene | 0.080 | 48 | 20 | 0.032 | 0.013 |
| Benzo(k)fluoranthene | 0.080 | 47 | 19 | 0.031 | 0.013 |
| Benzo(a)pyrene | 0.080 | 48 | 20 | 0.032 | 0.013 |
| Bis(2-ethylhexyl) phthalate | 0.080 | 258 | 95 | 0.172 | 0.063 |
| Carbon Tetrachloride | 0.080 | 380 | 142 | 0.254 | 0.095 |
| Chlorobenzene | 0.080 | 380 | 142 | 0.254 | 0.095 |
| Chloroethane | 0.080 | 295 | 110 | 0.197 | 0.073 |
| Chloroform | 0.080 | 325 | 111 | 0.217 | 0.074 |
| Chrysene | 0.080 | 47 | 19 | 0.031 | 0.013 |
| Di-n-butyl phthalate | 0.080 | 43 | 20 | 0.029 | 0.013 |
| 1,2-Dichlorobenzene | 0.080 | 794 | 196 | 0.530 | 0.131 |
| 1,3-Dichlorobenzene | 0.080 | 380 | 142 | 0.254 | 0.095 |
| 1,4-Dichlorobenzene | 0.080 | 380 | 142 | 0.254 | 0.095 |
| 1,1-Dichloroethane | 0.080 | 59 | 22 | 0.039 | 0.015 |
| 1,2-Dichloroethane | 0.080 | 574 | 180 | 0.383 | 0.120 |
| 1,1-Dichloroethylene | 0.080 | 60 | 22 | 0.040 | 0.015 |
| 1,2-trans-Dichloroethylene | 0.080 | 66 | 25 | 0.044 | 0.017 |
| 1,2-Dichloropropane | 0.080 | 794 | 196 | 0.530 | 0.131 |
| 1,3-Dichloropropylene | 0.080 | 794 | 196 | 0.530 | 0.131 |

| Parameter | OCPSF Process Wastewater Flow (mgd) | Concentration Factors | | Proposed Internal Outfall 541 (1531) Limits | |
|---|---|---|---|---|---|
| | | Maximum for Any One Day (µg/L) | Maximum for any Monthly Average (µg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| Diethyl phthalate | 0.080 | 113 | 46 | 0.075 | 0.031 |
| 2,4-Dimethylphenol | 0.080 | 47 | 19 | 0.031 | 0.013 |
| Dimethyl phthalate | 0.080 | 47 | 19 | 0.031 | 0.013 |
| 4,6-Dinitro-o-cresol | 0.080 | 277 | 78 | 0.185 | 0.052 |
| 2,4-Dinitrophenol | 0.080 | 4,291 | 1,207 | 2.86 | 0.805 |
| Ethylbenzene | 0.080 | 380 | 142 | 0.254 | 0.095 |
| Fluoranthene | 0.080 | 54 | 22 | 0.036 | 0.015 |
| Fluorene | 0.080 | 47 | 19 | 0.031 | 0.013 |
| Hexachlorobenzene | 0.080 | 794 | 196 | 0.530 | 0.131 |
| Hexachlorobutadiene | 0.080 | 380 | 142 | 0.254 | 0.095 |
| Hexachloroethane | 0.080 | 794 | 196 | 0.530 | 0.131 |
| Methyl Chloride | **FDF CALCULATION PROVIDED IN A SEPARATE TABLE – SEE BELOW** | | | | |
| Methylene Chloride | 0.080 | 170 | 36 | 0.113 | 0.024 |
| Naphthalene | 0.080 | 47 | 19 | 0.031 | 0.013 |
| Nitrobenzene | 0.080 | 6,402 | 2,237 | 4.27 | 1.49 |
| 2-Nitrophenol | 0.080 | 231 | 65 | 0.154 | 0.043 |
| 4-Nitrophenol | 0.080 | 576 | 162 | 0.384 | 0.108 |
| Phenanthrene | 0.080 | 47 | 19 | 0.031 | 0.013 |
| Phenol | 0.080 | 47 | 19 | 0.031 | 0.013 |
| Pyrene | 0.080 | 48 | 20 | 0.032 | 0.013 |
| Tetrachloroethylene | 0.080 | 164 | 52 | 0.109 | 0.035 |
| Toluene | 0.080 | 74 | 28 | 0.049 | 0.019 |
| 1,2,4-Trichlorobenzene | 0.080 | 794 | 196 | 0.530 | 0.131 |
| 1,1,1-Trichloroethane | 0.080 | 59 | 22 | 0.039 | 0.015 |
| 1,1,2-Trichloroethane | 0.080 | 127 | 32 | 0.085 | 0.021 |
| Trichloroethylene | 0.080 | 69 | 26 | 0.046 | 0.017 |
| Vinyl Chloride | 0.080 | 172 | 97 | 0.115 | 0.065 |

Proposed Methyl Chloride Permit Limits (Based on existing FDF)

OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) **0.080 mgd**

FDF Variance

| Parameter | OCPSF Process Flow (mgd) | Concentration Factors | | Proposed Permit Limits | |
|---|---|---|---|---|---|
| | | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **Methyl Chloride** | 0.080 | 4.04 | 1.66 | 2.695 | 1.108 |

**Internal Outfall 611 (1711)**

Proposed $BOD_5$ and TSS Permit Limits

OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) 3.31 mgd

**TOTAL OCPSF FLOW** **3.31** **mgd**

Concentration Factors from 40 CFR 414 Subpart F

| Parameter | OCPSF Process Flow (mgd) | Concentration Factors | | Proposed OCPSF Allotment | |
|---|---|---|---|---|---|
| | | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **$BOD_5$** | 3.31 | 80 | 30 | 2,208 | 828 |
| **TSS** | 3.31 | 149 | 46 | 4,113 | 1,270 |

Utility Wastewater Flow 0.12 mgd

TTU Flow 0.73 mgd

**TOTAL NON-OCPSF AVERAGE FLOW** **0.85** **mgd**

Concentration Factors from LDEQ Discussion

| Parameter | NON-OCPSF Flow (mgd) | Concentration Factors | | Proposed Non-OCPSF Allotment | |
|---|---|---|---|---|---|
| | | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **$BOD_5$** | 0.850 | 30 | 20 | 213 | 142 |
| **TSS** | 0.850 | 30 | 20 | 213 | 142 |

| Proposed Internal Outfall 611 (1711) Limits | | |
|---|---|---|
| Parameter | Daily Maximum (ppd) | Monthly Average (ppd) |
| **$BOD_5$** | 2,421 | 970 |
| **TSS** | 4,326 | 1,412 |

Proposed Organic Parameters Permit Limits

OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) 3.31 mgd

**TOTAL OCPSF FLOW** **3.31** **mgd**

| Parameter | OCPSF Process Wastewater Flow (mgd) | Concentration Factors | | Proposed Internal Outfall 611 (1711) Limits | |
|---|---|---|---|---|---|
| | | Maximum for Any One Day (µg/L) | Maximum for any Monthly Average (µg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **40 CFR 414 Subpart J** | | | | | |
| Acenaphthene | 3.31 | 47 | 19 | 1.30 | 0.525 |
| Acenaphthylene | 3.31 | 47 | 19 | 1.30 | 0.525 |
| Acrylonitrile | 3.31 | 232 | 94 | 6.41 | 2.60 |
| Anthracene | 3.31 | 47 | 19 | 1.30 | 0.525 |
| Benzene | 3.31 | 134 | 57 | 3.70 | 1.58 |
| Benzo(a)anthracene | 3.31 | 47 | 19 | 1.30 | 0.525 |
| 3,4-Benzofluoranthene | 3.31 | 48 | 20 | 1.33 | 0.553 |
| Benzo(k)fluoranthene | 3.31 | 47 | 19 | 1.30 | 0.525 |
| Benzo(a)pyrene | 3.31 | 48 | 20 | 1.33 | 0.553 |
| Bis(2-ethylhexyl) phthalate | 3.31 | 258 | 95 | 7.13 | 2.63 |
| Carbon Tetrachloride | 3.31 | 380 | 142 | 10.5 | 3.92 |
| Chlorobenzene | 3.31 | 380 | 142 | 10.5 | 3.92 |
| Chloroethane | 3.31 | 295 | 110 | 8.15 | 3.04 |
| Chloroform | 3.31 | 325 | 111 | 8.98 | 3.07 |
| Chrysene | 3.31 | 47 | 19 | 1.30 | 0.525 |
| Di-n-butyl phthalate | 3.31 | 43 | 20 | 1.19 | 0.553 |
| 1,2-Dichlorobenzene | 3.31 | 794 | 196 | 21.9 | 5.42 |
| 1,3-Dichlorobenzene | 3.31 | 380 | 142 | 10.5 | 3.92 |
| 1,4-Dichlorobenzene | 3.31 | 380 | 142 | 10.5 | 3.92 |
| 1,1-Dichloroethane | 3.31 | 59 | 22 | 1.63 | 0.608 |
| 1,2-Dichloroethane | 3.31 | 574 | 180 | 15.9 | 4.97 |
| 1,1-Dichloroethylene | 3.31 | 60 | 22 | 1.66 | 0.608 |
| 1,2-trans-Dichloroethylene | 3.31 | 66 | 25 | 1.82 | 0.691 |
| 1,2-Dichloropropane | 3.31 | 794 | 196 | 21.9 | 5.42 |
| 1,3-Dichloropropylene | 3.31 | 794 | 196 | 21.9 | 5.42 |
| Diethyl phthalate | 3.31 | 113 | 46 | 3.12 | 1.27 |
| 2,4-Dimethylphenol | 3.31 | 47 | 19 | 1.30 | 0.525 |
| Dimethyl phthalate | 3.31 | 47 | 19 | 1.30 | 0.525 |
| 4,6-Dinitro-o-cresol | 3.31 | 277 | 78 | 7.66 | 2.16 |
| 2,4-Dinitrophenol | 3.31 | 4,291 | 1,207 | 119 | 33.4 |
| Ethylbenzene | 3.31 | 380 | 142 | 10.5 | 3.92 |
| Fluoranthene | 3.31 | 54 | 22 | 1.49 | 0.608 |
| Fluorene | 3.31 | 47 | 19 | 1.30 | 0.525 |
| Hexachlorobenzene | 3.31 | 794 | 196 | 21.9 | 5.42 |
| Hexachlorobutadiene | 3.31 | 380 | 142 | 10.5 | 3.92 |
| Hexachloroethane | 3.31 | 794 | 196 | 21.9 | 5.42 |
| Methyl Chloride | 3.31 | 295 | 110 | 8.15 | 3.04 |
| Methylene Chloride | 3.31 | 170 | 36 | 4.70 | 0.995 |
| Naphthalene | 3.31 | 47 | 19 | 1.30 | 0.525 |
| Nitrobenzene | 3.31 | 6,402 | 2,237 | 177 | 61.8 |
| 2-Nitrophenol | 3.31 | 231 | 65 | 6.38 | 1.80 |
| 4-Nitrophenol | 3.31 | 576 | 162 | 15.9 | 4.48 |
| Phenanthrene | 3.31 | 47 | 19 | 1.30 | 0.525 |
| Phenol | 3.31 | 47 | 19 | 1.30 | 0.525 |
| Pyrene | 3.31 | 48 | 20 | 1.33 | 0.553 |
| Tetrachloroethylene | 3.31 | 164 | 52 | 4.53 | 1.44 |

| Parameter | OCPSF Process Wastewater Flow (mgd) | Concentration Factors | | Proposed Internal Outfall 611 (1711) Limits | |
|---|---|---|---|---|---|
| | | Maximum for Any One Day (µg/L) | Maximum for any Monthly Average (µg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| Toluene | 3.31 | 74 | 28 | 2.05 | 0.774 |
| 1,2,4-Trichlorobenzene | 3.31 | 794 | 196 | 21.9 | 5.42 |
| 1,1,1-Trichloroethane | 3.31 | 59 | 22 | 1.63 | 0.608 |
| 1,1,2-Trichloroethane | 3.31 | 127 | 32 | 3.51 | 0.884 |
| Trichloroethylene | 3.31 | 69 | 26 | 1.91 | 0.719 |
| Vinyl Chloride | 3.31 | 172 | 97 | 4.754 | 2.68 |

**Internal Outfall 631 (2001) – Phase I**

Proposed $BOD_5$ and TSS Permit Limits

OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) **16.7** mgd
**TOTAL OCPSF FLOW** **16.7** **mgd**

Concentration Factors from 40 CFR 414 Subpart D

| Production Percentage from Subpart D | 1.30% | Concentration Factors | | Proposed OCPSF Allotment | |
|---|---|---|---|---|---|
| Parameter | OCPSF Process Flow (mgd) | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **$BOD_5$** | 0.217 | 64 | 24 | 116 | 43.4 |
| **TSS** | 0.217 | 130 | 40 | 235 | 72.4 |

Concentration Factors from 40 CFR 414 Subpart F

| Production Percentage from Subpart F | 83.8% | Concentration Factors | | Proposed OCPSF Allotment | |
|---|---|---|---|---|---|
| Parameter | OCPSF Process Flow (mgd) | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **$BOD_5$** | 13.99 | 80 | 30 | 9,334 | 3,500 |
| **TSS** | 13.99 | 149 | 46 | 17,385 | 5,367 |

Concentration Factors from 40 CFR 414 Subpart G

| Production Percentage from Subpart G | 11.5% | Concentration Factors | | Proposed OCPSF Allotment | |
|---|---|---|---|---|---|
| Parameter | OCPSF Process Flow (mgd) | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **$BOD_5$** | 1.92 | 92 | 34 | 1,473 | 544 |
| **TSS** | 1.92 | 159 | 49 | 2,546 | 785 |

Concentration Factors from 40 CFR 414 Subpart H

| Production Percentage from Subpart H | 3.40% | Concentration Factors | | Proposed OCPSF Allotment | |
|---|---|---|---|---|---|
| **Parameter** | **OCPSF Process Flow (mgd)** | **Daily Maximum (mg/L)** | **Monthly Average (mg/L)** | **Daily Maximum (ppd)** | **Monthly Average (ppd)** |
| **$BOD_5$** | 0.568 | 120 | 45 | 568 | 213 |
| **TSS** | 0.568 | 183 | 57 | 867 | 270 |

| Proposed OCPSF Allotment | | |
|---|---|---|
| **Parameter** | **Daily Maximum (ppd)** | **Monthly Average (ppd)** |
| **$BOD_5$** | 11,491 | 4,300 |
| **TSS** | 21,033 | 6,494 |

Utility Wastewater Average Flow 1.12 mgd
**TOTAL UTILITY AVERAGE FLOW** **1.12 mgd**

Concentration Factors from LDEQ Discussion

| | | Concentration Factors | | Proposed Utility Allotment | |
|---|---|---|---|---|---|
| **Parameter** | **Utility Flow (mgd)** | **Daily Maximum (mg/L)** | **Monthly Average (mg/L)** | **Daily Maximum (ppd)** | **Monthly Average (ppd)** |
| **$BOD_5$** | 1.12 | 30 | 20 | 280 | 187 |
| **TSS** | 1.12 | 30 | 20 | 280 | 187 |

Sanitary Wastewater Average Flow 0.115 mgd
**TOTAL SANITARY AVERAGE FLOW** **0.115 mgd**

Concentration Factors from LDEQ Discussion

| | | Concentration Factors | | Proposed Utility Allotment | |
|---|---|---|---|---|---|
| **Parameter** | **Sanitary Flow (mgd)** | **Daily Maximum (mg/L)** | **Monthly Average (mg/L)** | **Daily Maximum (ppd)** | **Monthly Average (ppd)** |
| **$BOD_5$** | 0.115 | 45 | 30 | 43.2 | 28.8 |
| **TSS** | 0.115 | 45 | 30 | 43.2 | 28.8 |

**Total Requested $BOD_5$ and TSS Allocation**

| | Proposed Internal Outfall 631 (2001) Limits – Phase I | |
|---|---|---|
| **Parameter** | **Daily Maximum (ppd)** | **Monthly Average (ppd)** |
| **$BOD_5$** | 11,814 | 4,516 |
| **TSS** | 21,356 | 6,710 |

Proposed Organic Parameters and Metals Permit Limits

OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) 16.7 mgd

**TOTAL OCPSF FLOW** **16.7 mgd**

| Parameter | OCPSF Process Wastewater Flow (mgd) | Concentration Factors | | Proposed Outfall 631 (2001) Limits | |
|---|---|---|---|---|---|
| | | Maximum for Any One Day (µg/L) | Maximum for any Monthly Average (µg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **40 CFR 414 Subpart I** | | | | | |
| Acenaphthene | 16.7 | 59 | 22 | 8.22 | 3.06 |
| Acenaphthylene | 16.7 | 59 | 22 | 8.22 | 3.06 |
| Acrylonitrile | 16.7 | 242 | 96 | 33.7 | 13.4 |
| Anthracene | 16.7 | 59 | 22 | 8.22 | 3.06 |
| Benzene | 16.7 | 136 | 37 | 18.9 | 5.15 |
| Benzo(a)anthracene | 16.7 | 59 | 22 | 8.22 | 3.06 |
| 3,4-Benzofluoranthene | 16.7 | 61 | 23 | 8.50 | 3.20 |
| Benzo(k)fluoranthene | 16.7 | 59 | 22 | 8.22 | 3.06 |
| Benzo(a)pyrene | 16.7 | 61 | 23 | 8.50 | 3.20 |
| Bis(2-ethylhexyl) phthalate | 16.7 | 279 | 103 | 38.9 | 14.3 |
| Carbon Tetrachloride | 16.7 | 38 | 18 | 5.29 | 2.51 |
| Chlorobenzene | 16.7 | 28 | 15 | 3.90 | 2.09 |
| Chloroethane | 16.7 | 268 | 104 | 37.3 | 14.5 |
| Chloroform | 16.7 | 46 | 21 | 6.41 | 2.92 |
| 2-Chlorophenol | 16.7 | 98 | 31 | 13.6 | 4.32 |
| Chrysene | 16.7 | 59 | 22 | 8.22 | 3.06 |
| Di-n-butyl phthalate | 16.7 | 57 | 27 | 7.94 | 3.76 |
| 1,2-Dichlorobenzene | 16.7 | 163 | 77 | 22.7 | 10.7 |
| 1,3-Dichlorobenzene | 16.7 | 44 | 31 | 6.13 | 4.32 |
| 1,4-Dichlorobenzene | 16.7 | 28 | 15 | 3.90 | 2.09 |
| 1,1-Dichloroethane | 16.7 | 59 | 22 | 8.22 | 3.06 |
| 1,2-Dichloroethane | 16.7 | 211 | 68 | 29.4 | 9.5 |
| 1,1-Dichloroethylene | 16.7 | 25 | 16 | 3.48 | 2.23 |
| 1,2-trans-Dichloroethylene | 16.7 | 54 | 21 | 7.52 | 2.92 |
| 2,4-Dichlorophenol | 16.7 | 112 | 39 | 15.6 | 5.43 |
| 1,2-Dichloropropane | 16.7 | 230 | 153 | 32.0 | 21.3 |
| 1,3-Dichloropropylene | 16.7 | 44 | 29 | 6.13 | 4.04 |
| Diethyl phthalate | 16.7 | 203 | 81 | 28.3 | 11.3 |
| 2,4-Dimethylphenol | 16.7 | 36 | 18 | 5.01 | 2.51 |
| Dimethyl phthalate | 16.7 | 47 | 19 | 6.55 | 2.65 |
| 4,6-Dinitro-o-cresol | 16.7 | 277 | 78 | 38.6 | 10.9 |
| 2,4-Dinitrophenol | 16.7 | 123 | 71 | 17.1 | 9.9 |
| 2,4-Dinitrotoluene | 16.7 | 285 | 113 | 39.7 | 15.7 |
| 2,6-Dinitrotoluene | 16.7 | 641 | 255 | 89 | 35.5 |
| Ethylbenzene | 16.7 | 108 | 32 | 15.0 | 4.46 |
| Fluoranthene | 16.7 | 68 | 25 | 9.5 | 3.48 |
| Fluorene | 16.7 | 59 | 22 | 8.22 | 3.06 |
| Hexachlorobenzene | 16.7 | 28 | 15 | 3.90 | 2.09 |
| Hexachlorobutadiene | 16.7 | 49 | 20 | 6.82 | 2.79 |
| Hexachloroethane | 16.7 | 54 | 21 | 7.52 | 2.92 |
| Methyl Chloride | 16.7 | 190 | 86 | 26.5 | 12.0 |

| Parameter | OCPSF Process Wastewater Flow (mgd) | Concentration Factors | | Proposed Outfall 631 (2001) Limits | |
|---|---|---|---|---|---|
| | | Maximum for Any One Day (µg/L) | Maximum for any Monthly Average (µg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| Methylene Chloride | 16.7 | 89 | 40 | 12.4 | 5.57 |
| Naphthalene | 16.7 | 59 | 22 | 8.22 | 3.06 |
| Nitrobenzene | 16.7 | 68 | 27 | 9.5 | 3.76 |
| 2-Nitrophenol | 16.7 | 69 | 41 | 9.6 | 5.71 |
| 4-Nitrophenol | 16.7 | 124 | 72 | 17.3 | 10.0 |
| Phenanthrene | 16.7 | 59 | 22 | 8.22 | 3.06 |
| Phenol | 16.7 | 26 | 15 | 3.62 | 2.09 |
| Pyrene | 16.7 | 67 | 25 | 9.3 | 3.48 |
| Tetrachloroethylene | 16.7 | 56 | 22 | 7.80 | 3.06 |
| Toluene | 16.7 | 80 | 26 | 11.1 | 3.62 |
| Total Copper | 16.7 | 3,380 | 1,450 | 470.8 | 201.9 |
| 1,2,4-Trichlorobenzene | 16.7 | 140 | 68 | 19.5 | 9.5 |
| 1,1,1-Trichloroethane | 16.7 | 54 | 21 | 7.52 | 2.92 |
| 1,1,2-Trichloroethane | 16.7 | 54 | 21 | 7.52 | 2.92 |
| Trichloroethylene | 16.7 | 54 | 21 | 7.52 | 2.92 |
| Vinyl Chloride | 16.7 | 268 | 104 | 37.3 | 14.5 |

**Internal Outfall 631 (2001) – Phase II**

OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) **16.4** mgd
**TOTAL OCPSF FLOW** **16.4 mgd**

Concentration Factors from 40 CFR 414 Subpart D

| Production Percentage from Subpart D | 1.70% | Concentration Factors | | Proposed OCPSF Allotment | |
|---|---|---|---|---|---|
| Parameter | OCPSF Process Flow (mgd) | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **$BOD_5$** | 0.279 | 64 | 24 | 149 | 55.8 |
| **TSS** | 0.279 | 130 | 40 | 303 | 93.1 |

Concentration Factors from 40 CFR 414 Subpart F

| Production Percentage from Subpart F | 77.8% | Concentration Factors | | Proposed OCPSF Allotment | |
|---|---|---|---|---|---|
| Parameter | OCPSF Process Flow (mgd) | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **$BOD_5$** | 12.8 | 80 | 30 | 8,540 | 3,203 |
| **TSS** | 12.8 | 149 | 46 | 15,906 | 4,911 |

Concentration Factors from 40 CFR 414 Subpart G

| Production Percentage from Subpart G | 15.8% | Concentration Factors | | Proposed OCPSF Allotment | |
|---|---|---|---|---|---|
| Parameter | OCPSF Process Flow (mgd) | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| $BOD_5$ | 2.6 | 92 | 34 | 1,995 | 737 |
| TSS | 2.6 | 159 | 49 | 3,448 | 1,063 |

Concentration Factors from 40 CFR 414 Subpart H

| Production Percentage from Subpart H | 4.70% | Concentration Factors | | Proposed OCPSF Allotment | |
|---|---|---|---|---|---|
| Parameter | OCPSF Process Flow (mgd) | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| $BOD_5$ | 0.772 | 120 | 45 | 773 | 290 |
| TSS | 0.772 | 183 | 57 | 1,178 | 367 |

| | Proposed OCPSF Allotment | |
|---|---|---|
| Parameter | Daily Maximum (ppd) | Monthly Average (ppd) |
| $BOD_5$ | 11,457 | 4,286 |
| TSS | 20,835 | 6,434 |

Utility Wastewater Average Flow 1.12 mgd
**TOTAL UTILITY AVERAGE FLOW** **1.12 mgd**

Concentration Factors from LDEQ Discussion

| | | Concentration Factors | | Proposed Utility Allotment | |
|---|---|---|---|---|---|
| Parameter | Utility Flow (mgd) | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| $BOD_5$ | 1.12 | 30 | 20 | 280 | 187 |
| TSS | 1.12 | 30 | 20 | 280 | 187 |

Sanitary Wastewater Average Flow 0.115 mgd
**TOTAL SANITARY AVERAGE FLOW** **0.115 mgd**

Concentration Factors from LDEQ Discussion

| | | Concentration Factors | | Proposed Utility Allotment | |
|---|---|---|---|---|---|
| Parameter | Sanitary Flow (mgd) | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| $BOD_5$ | 0.115 | 45 | 30 | 43.2 | 28.8 |
| TSS | 0.115 | 45 | 30 | 43.2 | 28.8 |

**Total Requested $BOD_5$ and TSS Allocation**

| Parameter | Proposed Internal Outfall 631 (2001) Limits – Phase II | |
|---|---|---|
| | Daily Maximum (ppd) | Monthly Average (ppd) |
| **$BOD_5$** | 11,780 | 4,502 |
| **TSS** | 21,158 | 6,650 |

Proposed Organic Parameters and Metals Permit Limits

OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) 16.4 mgd

**TOTAL OCPSF FLOW** **16.4 mgd**

| Parameter | OCPSF Process Wastewater Flow (mgd) | Concentration Factors | | Proposed Outfall 631 (2001) Limits | |
|---|---|---|---|---|---|
| | | Maximum for Any One Day (µg/L) | Maximum for any Monthly Average (µg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **40 CFR 414 Subpart I** | | | | | |
| Acenaphthene | 16.4 | 59 | 22 | 8.09 | 3.02 |
| Acenaphthylene | 16.4 | 59 | 22 | 8.09 | 3.02 |
| Acrylonitrile | 16.4 | 242 | 96 | 33.2 | 13.2 |
| Anthracene | 16.4 | 59 | 22 | 8.09 | 3.02 |
| Benzene | 16.4 | 136 | 37 | 18.6 | 5.07 |
| Benzo(a)anthracene | 16.4 | 59 | 22 | 8.09 | 3.02 |
| 3,4-Benzofluoranthene | 16.4 | 61 | 23 | 8.36 | 3.15 |
| Benzo(k)fluoranthene | 16.4 | 59 | 22 | 8.09 | 3.02 |
| Benzo(a)pyrene | 16.4 | 61 | 23 | 8.36 | 3.15 |
| Bis(2-ethylhexyl) phthalate | 16.4 | 279 | 103 | 38.2 | 14.1 |
| Carbon Tetrachloride | 16.4 | 38 | 18 | 5.21 | 2.47 |
| Chlorobenzene | 16.4 | 28 | 15 | 3.84 | 2.06 |
| Chloroethane | 16.4 | 268 | 104 | 36.7 | 14.3 |
| Chloroform | 16.4 | 46 | 21 | 6.31 | 2.88 |
| 2-Chlorophenol | 16.4 | 98 | 31 | 13.4 | 4.25 |
| Chrysene | 16.4 | 59 | 22 | 8.09 | 3.02 |
| Di-n-butyl phthalate | 16.4 | 57 | 27 | 7.81 | 3.70 |
| 1,2-Dichlorobenzene | 16.4 | 163 | 77 | 22.3 | 10.6 |
| 1,3-Dichlorobenzene | 16.4 | 44 | 31 | 6.03 | 4.25 |
| 1,4-Dichlorobenzene | 16.4 | 28 | 15 | 3.84 | 2.06 |
| 1,1-Dichloroethane | 16.4 | 59 | 22 | 8.09 | 3.02 |
| 1,2-Dichloroethane | 16.4 | 211 | 68 | 28.9 | 9.3 |
| 1,1-Dichloroethylene | 16.4 | 25 | 16 | 3.43 | 2.19 |
| 1,2-trans-Dichloroethylene | 16.4 | 54 | 21 | 7.40 | 2.88 |
| 2,4-Dichlorophenol | 16.4 | 112 | 39 | 15.4 | 5.35 |
| 1,2-Dichloropropane | 16.4 | 230 | 153 | 31.5 | 21.0 |
| 1,3-Dichloropropylene | 16.4 | 44 | 29 | 6.03 | 3.97 |
| Diethyl phthalate | 16.4 | 203 | 81 | 27.8 | 11.1 |
| 2,4-Dimethylphenol | 16.4 | 36 | 18 | 4.93 | 2.47 |
| Dimethyl phthalate | 16.4 | 47 | 19 | 6.44 | 2.60 |

| Parameter | OCPSF Process Wastewater Flow (mgd) | Concentration Factors | | Proposed Outfall 631 (2001) Limits | |
|---|---|---|---|---|---|
| | | Maximum for Any One Day (µg/L) | Maximum for any Monthly Average (µg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| 4,6-Dinitro-o-cresol | 16.4 | 277 | 78 | 38.0 | 10.7 |
| 2,4-Dinitrophenol | 16.4 | 123 | 71 | 16.9 | 9.7 |
| 2,4-Dinitrotoluene | 16.4 | 285 | 113 | 39.1 | 15.5 |
| 2,6-Dinitrotoluene | 16.4 | 641 | 255 | 88 | 35.0 |
| Ethylbenzene | 16.4 | 108 | 32 | 14.8 | 4.39 |
| Fluoranthene | 16.4 | 68 | 25 | 9.3 | 3.43 |
| Fluorene | 16.4 | 59 | 22 | 8.09 | 3.02 |
| Hexachlorobenzene | 16.4 | 28 | 15 | 3.84 | 2.06 |
| Hexachlorobutadiene | 16.4 | 49 | 20 | 6.72 | 2.74 |
| Hexachloroethane | 16.4 | 54 | 21 | 7.40 | 2.88 |
| Methyl Chloride | 16.4 | 190 | 86 | 26.0 | 11.8 |
| Methylene Chloride | 16.4 | 89 | 40 | 12.2 | 5.48 |
| Naphthalene | 16.4 | 59 | 22 | 8.09 | 3.02 |
| Nitrobenzene | 16.4 | 68 | 27 | 9.3 | 3.70 |
| 2-Nitrophenol | 16.4 | 69 | 41 | 9.5 | 5.62 |
| 4-Nitrophenol | 16.4 | 124 | 72 | 17.0 | 9.9 |
| Phenanthrene | 16.4 | 59 | 22 | 8.09 | 3.02 |
| Phenol | 16.4 | 26 | 15 | 3.56 | 2.06 |
| Pyrene | 16.4 | 67 | 25 | 9.2 | 3.43 |
| Tetrachloroethylene | 16.4 | 56 | 22 | 7.68 | 3.02 |
| Toluene | 16.4 | 80 | 26 | 11.0 | 3.56 |
| Total Copper | 16.4 | 3,380 | 1,450 | 462.3 | 198.3 |
| 1,2,4-Trichlorobenzene | 16.4 | 140 | 68 | 19.2 | 9.3 |
| 1,1,1-Trichloroethane | 16.4 | 54 | 21 | 7.40 | 2.88 |
| 1,1,2-Trichloroethane | 16.4 | 54 | 21 | 7.40 | 2.88 |
| Trichloroethylene | 16.4 | 54 | 21 | 7.40 | 2.88 |
| Vinyl Chloride | 16.4 | 268 | 104 | 36.7 | 14.3 |

**Internal Outfall 641 (3121)**

Proposed $BOD_5$ and TSS Permit Limits

OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average)

0.182 mgd

**TOTAL OCPSF FLOW** **0.182 mgd**

Concentration Factors from 40 CFR 414 Subpart D

| Parameter | OCPSF Process Flow (mgd) | Concentration Factors | | Proposed OCPSF Allotment | |
|---|---|---|---|---|---|
| | | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **$BOD_5$** | 0.182 | 64 | 24 | 97 | 36 |
| **TSS** | 0.182 | 130 | 40 | 197 | 61 |

Utility Wastewater Average Flow 0.388 mgd
**TOTAL UTILITY AVERAGE FLOW** **0.388 mgd**

Concentration Factors from LDEQ Discussion

| Parameter | Utility Flow (mgd) | Concentration Factors | | Proposed Utility Allotment | |
|---|---|---|---|---|---|
| | | Daily Maximum (mg/L) | Monthly Average (mg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **$BOD_5$** | 0.388 | 30 | 20 | 97 | 65 |
| **TSS** | 0.388 | 30 | 20 | 97 | 65 |

**Total Requested BOD and TSS Allocation**

| Parameter | Proposed Internal Outfall 641 (3121) Limits | |
|---|---|---|
| | Daily Maximum (ppd) | Monthly Average (ppd) |
| **$BOD_5$** | 194 | 101 |
| **TSS** | 294 | 126 |

Proposed Organic Parameters Permit Limits

OCPSF Wastewater Average Flow (Maximum 30-Day Monthly Average) 0.182 mgd
**TOTAL OCPSF FLOW** **0.182 mgd**

| Parameter | OCPSF Process Wastewater Flow (mgd) | Concentration Factors | | Proposed Internal Outfall 641 (3121) Limits | |
|---|---|---|---|---|---|
| | | Maximum for Any One Day (µg/L) | Maximum for any Monthly Average (µg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| **40 CFR 414 Subpart J** | | | | | |
| Acenaphthene | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Acenaphthylene | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Acrylonitrile | 0.182 | 232 | 94 | 0.352 | 0.142 |
| Anthracene | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Benzene | 0.182 | 134 | 57 | 0.203 | 0.086 |
| Benzo(a)anthracene | 0.182 | 47 | 19 | 0.071 | 0.029 |
| 3,4-Benzofluoranthene | 0.182 | 48 | 20 | 0.073 | 0.030 |
| Benzo(k)fluoranthene | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Benzo(a)pyrene | 0.182 | 48 | 20 | 0.073 | 0.030 |
| Bis(2-ethylhexyl) phthalate | 0.182 | 258 | 95 | 0.391 | 0.144 |
| Carbon Tetrachloride | 0.182 | 380 | 142 | 0.576 | 0.215 |
| Chlorobenzene | 0.182 | 380 | 142 | 0.576 | 0.215 |
| Chloroethane | 0.182 | 295 | 110 | 0.447 | 0.167 |
| Chloroform | 0.182 | 325 | 111 | 0.493 | 0.168 |
| Chrysene | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Di-n-butyl phthalate | 0.182 | 43 | 20 | 0.065 | 0.030 |
| 1,2-Dichlorobenzene | 0.182 | 794 | 196 | 1.203 | 0.297 |
| 1,3-Dichlorobenzene | 0.182 | 380 | 142 | 0.576 | 0.215 |

| | | Concentration Factors | | Proposed Internal Outfall 641 (3121) Limits | |
|---|---|---|---|---|---|
| Parameter | OCPSF Process Wastewater Flow (mgd) | Maximum for Any One Day (µg/L) | Maximum for any Monthly Average (µg/L) | Daily Maximum (ppd) | Monthly Average (ppd) |
| 1,4-Dichlorobenzene | 0.182 | 380 | 142 | 0.576 | 0.215 |
| 1,1-Dichloroethane | 0.182 | 59 | 22 | 0.089 | 0.033 |
| 1,2-Dichloroethane | 0.182 | 574 | 180 | 0.870 | 0.273 |
| 1,1-Dichloroethylene | 0.182 | 60 | 22 | 0.091 | 0.033 |
| 1,2-trans-Dichloroethylene | 0.182 | 66 | 25 | 0.100 | 0.038 |
| 1,2-Dichloropropane | 0.182 | 794 | 196 | 1.203 | 0.297 |
| 1,3-Dichloropropylene | 0.182 | 794 | 196 | 1.203 | 0.297 |
| Diethyl phthalate | 0.182 | 113 | 46 | 0.171 | 0.070 |
| 2,4-Dimethylphenol | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Dimethyl phthalate | 0.182 | 47 | 19 | 0.071 | 0.029 |
| 4,6-Dinitro-o-cresol | 0.182 | 277 | 78 | 0.420 | 0.118 |
| 2,4-Dinitrophenol | 0.182 | 4,291 | 1,207 | 6.503 | 1.829 |
| Ethylbenzene | 0.182 | 380 | 142 | 0.576 | 0.215 |
| Fluoranthene | 0.182 | 54 | 22 | 0.082 | 0.033 |
| Fluorene | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Hexachlorobenzene | 0.182 | 794 | 196 | 1.203 | 0.297 |
| Hexachlorobutadiene | 0.182 | 380 | 142 | 0.576 | 0.215 |
| Hexachloroethane | 0.182 | 794 | 196 | 1.203 | 0.297 |
| Methyl Chloride | 0.182 | 295 | 110 | 0.447 | 0.167 |
| Methylene Chloride | 0.182 | 170 | 36 | 0.258 | 0.055 |
| Naphthalene | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Nitrobenzene | 0.182 | 6,402 | 2,237 | 9.703 | 3.390 |
| 2-Nitrophenol | 0.182 | 231 | 65 | 0.350 | 0.099 |
| 4-Nitrophenol | 0.182 | 576 | 162 | 0.873 | 0.246 |
| Phenanthrene | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Phenol | 0.182 | 47 | 19 | 0.071 | 0.029 |
| Pyrene | 0.182 | 48 | 20 | 0.073 | 0.030 |
| Tetrachloroethylene | 0.182 | 164 | 52 | 0.249 | 0.079 |
| Toluene | 0.182 | 74 | 28 | 0.112 | 0.042 |
| 1,2,4-Trichlorobenzene | 0.182 | 794 | 196 | 1.203 | 0.297 |
| 1,1,1-Trichloroethane | 0.182 | 59 | 22 | 0.089 | 0.033 |
| 1,1,2-Trichloroethane | 0.182 | 127 | 32 | 0.192 | 0.048 |
| Trichloroethylene | 0.182 | 69 | 26 | 0.105 | 0.039 |
| Vinyl Chloride | 0.182 | 172 | 97 | 0.261 | 0.147 |

# Appendix B

wqsmodn.wk4 Date: 07/20 Appendix B-1 Page 1
Developer: Bruce Fielding Time: 03:34 PM
Software: Lotus 4.0 LA0003301, AI1409
Revision date: 3/11/09

Water Quality Screen for Dow Chemical

Input variables:

Receiving Water Characteristics:

| | |
|---|---|
| Receiving Water Name= | Mississippi River |
| Critical flow (Qr) cfs= | 141955 |
| Harm. mean/avg tidal cfs= | 366748 |
| Drinking Water=1 HHNPCR=2 | 1 |
| MW=1, BW=2, 0=n | |
| Rec. Water Hardness= | 153 |
| Rec. Water TSS= | 32 |
| Fisch/Specific=1,Stream=0 | |
| Diffuser Ratio= | |

Effluent Characteristics:

| | |
|---|---|
| Permittee= | Dow Chemical |
| Permit Number= | LA0003301, AI1409 |
| Facility flow (Qef),MGD= | 597 |
| Outfall Number = | 001 |
| Eff. data, 2=lbs/day | 2 |
| MQL, 2=lbs/day | 1 |
| Effluent Hardness= | N/A |
| Effluent TSS= | N/A |
| WQBL ind. 0=y, 1=n | |
| Acute/Chr. ratio 0=n, 1=y | 1 |
| Aquatic,acute only1=y,0=n | |

Page Numbering/Labeling

| | |
|---|---|
| Appendix | Appendix B-1 |
| Page Numbers 1=y, 0=n | 1 |
| Input Page # 1=y, 0=n | 1 |

Fischer/Site Specific inputs:

| | |
|---|---|
| Pipe=1,Canal=2,Specific=3 | |
| Pipe width, feet | |
| ZID plume dist., feet | |
| MZ plume dist., feet | |
| HHnc plume dist., feet | |
| HHc plume dist., feet | |

Fischer/site specific dilutions:

| | |
|---|---|
| F/specific ZID Dilution = | --- |
| F/specific MZ Dilution = | --- |
| F/specific HHnc Dilution= | --- |
| F/specific HHc Dilution= | --- |

Dilution:

| | |
|---|---|
| ZID Fs = | 0.033333 |
| MZ Fs = | 0.333333 |
| Critical Qr (MGD)= | 91745.52 |
| Harm. Mean (MGD)= | 237029.2 |
| ZID Dilution = | 0.16333 |
| MZ Dilution = | 0.019148 |
| HHnc Dilution= | 0.006465 |
| HHc Dilution= | 0.002512 |
| ZID Upstream = | 5.122586 |
| MZ Upstream = | 51.22586 |
| MZhhnc Upstream= | 153.6776 |
| MZhhc Upstream= | 397.0339 |
| ZID Hardness= | --- |
| MZ Hardness= | --- |
| ZID TSS= | --- |
| MZ TSS= | --- |

Multipliers:

| | |
|---|---|
| WLAa --> LTAa | 0.32 |
| WLAc --> LTAc | 0.53 |
| LTA a,c-->WQBL avg | 1.31 |
| LTA a,c-->WQBL max | 3.11 |
| LTA h --> WQBL max | 2.38 |
| WQBL-limit/report | 2.13 |
| WLA Fraction | 1 |
| WQBL Fraction | 1 |

Conversions:

| | |
|---|---|
| ug/L-->lbs/day Qef | 4.97898 |
| ug/L-->lbs/day Qeo | 0 |
| ug/L-->lbs/day Qr | 1183.905 |
| lbs/day-->ug/L Qeo | 0.200844 |
| lbs/day-->ug/L Qef | 0.200844 |
| diss-->tot 1=y0=n | 1 |
| Cu diss->totl=y0=n | 1 |
| cfs-->MGD | 0.6463 |

Receiving Stream:

| | |
|---|---|
| Default Hardness= | 25 |
| Default TSS= | 10 |
| 99 Crit., 1=y, 0=n | 1 |
| Old MQL=1, New=0 | 1 |

Toxicity Dilution Series:

| | |
|---|---|
| Biomonitoring dilution: | 0.191476 |
| Dilution Series Factor: | 0.75 |

| | Percent Effluent |
|---|---|
| Dilution No. 1 | 25.530% |
| Dilution No. 2 | 19.1476% |
| Dilution No. 3 | 14.3607% |
| Dilution No. 4 | 10.7705% |
| Dilution No. 5 | 8.0779% |

Partition Coefficients; Dissolved-->Total

| METALS | FW |
|---|---|
| Total Arsenic | 2.223578 |
| Total Cadmium | 3.549121 |
| Chromium III | 5.282524 |
| Chromium VI | 1 |
| Total Copper | 3.56078 |
| Total Lead | 6.6 |
| Total Mercury | 2.785159 |
| Total Nickel | 3.174756 |
| Total Zinc | 4.535534 |

Aquatic Life, Dissolved Metal Criteria, ug/L

| METALS | ACUTE | CHRONIC |
|---|---|---|
| Arsenic | 339.8 | 150 |
| Cadmium | 50.41446 | 1.411599 |
| Chromium III | 777.3694 | 252.1706 |
| Chromium VI | 15.712 | 10.582 |
| Copper | 27.50744 | 17.6668 |
| Lead | 102.28 | 3.985703 |
| Mercury | 1.734 | 0.012 |
| Nickel | 2028.29 | 225.2579 |
| Zinc | 164.0948 | 149.8435 |

Site Specific Multiplier Values:

| | |
|---|---|
| CV = | --- |
| N = | --- |
| WLAa --> LTAa | --- |
| WLAc --> LTAc | --- |
| LTA a,c-->WQBL avg | --- |
| LTA a,c-->WQBL max | --- |
| LTA h --> WQBL max | --- |

| (*1) Toxic Parameters | (*2) Instream Conc. ug/L | (*3) CuEffluent /Tech (Avg) lbs/day | (*4) Effluent /Tech (Max) lbs/day | (*5) MQL ug/L | (*6) 1=No 0=95 % | (*7) Effluent 95th % estimate Non-Tech lbs/day | (*8) Numerical Criteria Acute FW ug/L | (*9) Chronic FW ug/L | (*10) HHDW ug/L | (*11) HH Carcinogen Indicator "C" |
|---|---|---|---|---|---|---|---|---|---|---|
| NONCONVENTIONAL | | | | | | | | | | |
| Total Phenols (4AAP) | | | | 5 | | | 700 | 350 | 5 | |
| 3-Chlorophenol | | | | 10 | | | | | 0.1 | |
| 4-Chlorophenol | | | | 10 | | | 383 | 192 | 0.1 | |
| 2,3-Dichlorophenol | | | | 10 | | | | | 0.04 | |
| 2,5-Dichlorophenol | | | | 10 | | | | | 0.5 | |
| 2,6-Dichlorophenol | | | | 10 | | | | | 0.2 | |
| 3,4-Dichlorophenol | | | | 10 | | | | | 0.3 | |
| 2,4-Dichlorophenocy-acetic acid (2,4-D) | | | | --- | | | | | 100 | |
| 2-(2,4,5-Trichlorophen-oxy) propionic acid (2,4,5-TP, Silvex) | | | | --- | | | | | 10 | |
| METALS AND CYANIDE | | | | | | | | | | |
| Total Arsenic | | | | 10 | | | 755.5719 | 333.5367 | 111.1789 | |
| Total Cadmium | | | | 1 | | | 178.927 | 5.009936 | 35.49121 | |
| Chromium III | | | | 10 | | | 4106.472 | 1332.097 | 264.1262 | |
| Chromium VI | | | | 10 | | | 15.712 | 10.582 | 50 | C |
| Total Copper | | 47 | 115 | 10 | 1 | | 97.94796 | 62.9076 | 3560.78 | |
| Total Lead | | 23 | 57 | 5 | 1 | | 675.0477 | 26.30564 | 330 | |
| Total Mercury | | | | 0.2 | | | 4.829466 | 0.033422 | 5.570319 | |
| Total Nickel | | 36 | 93 | 40 | 1 | | 6439.327 | 715.1389 | | |
| Total Zinc | | | | 20 | | | 744.2576 | 679.6201 | 22677.67 | |
| Total Cyanide | | | | 20 | | | 45.9 | 5.4 | 663.8 | |
| DIOXIN | | | | | | | | | | |
| 2,3,7,8 TCDD; dioxin | | | 0.00001 | | | | | | 7.1E-007 | C |
| VOLATILE COMPOUNDS | | | | | | | | | | |
| Benzene | | 15 | 44 | 10 | 1 | | 2249 | 1125 | 1.1 | C |
| Bromoform | | | | 10 | | | 2930 | 1465 | 3.9 | C |
| Bromodichloromethane | | | | 10 | | | | | 0.2 | C |
| Carbon Tetrachloride | | 26 | 68 | 10 | 1 | | 2730 | 1365 | 0.22 | C |
| Chloroform | | 22 | 61 | 10 | 1 | | 2890 | 1445 | 5.3 | C |
| Dibromochloromethane | | | | 10 | | | | | 0.39 | C |
| 1,2-Dichloroethane | | 41 | 129 | 10 | 1 | | 11800 | 5900 | 0.36 | C |
| 1,1-Dichloroethylene | | 6 | 14 | 10 | 1 | | 1160 | 580 | 0.05 | C |
| 1,3-Dichloropropylene | | 37 | 137 | 10 | 1 | | 606 | 303 | 9.86 | |
| Ethylbenzene | | 29 | 80 | 10 | 1 | | 3200 | 1600 | 2390 | |
| Methyl Chloride | | 286 | 693 | 50 | 1 | | 55000 | 27500 | | |
| Methylene Chloride | | 12 | 42 | 20 | 1 | | 19300 | 9650 | 4.4 | C |
| 1,1,2,2-Tetrachloro-ethane | | | | 10 | | | 932 | 466 | 0.16 | C |

Appendix B-1
Dow Chemical
LA0003301, AI1409



| (*1) Toxic Parameters | (*12) WLAa Acute | (*13) WLAc Chronic | (*14) WLAh HHDW | (*15) LTAa Acute | (*16) LTAc Chronic | (*17) LTAh HHDW | (*18) Limiting A,C,HH | (*19) WQBL Avg 001 | (*20) WQBL Max 001 | (*21) WQBL Avg 001 | (*22) WQBL Max 001 | (*23) Need WQBL? |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | lbs/day | lbs/day | |
| NONCONVENTIONAL | | | | | | | | | | | | |
| Total Phenols (4AAP) | 4285.81 | 18279.05 | 773.3879 | 1371.459 | 9687.897 | 773.3879 | 773.3879 | 773.3879 | 1840.663 | 3850.683 | 9164.625 | no |
| 3-Chlorophenol | --- | --- | 15.46776 | --- | --- | 15.46776 | 15.46776 | 15.46776 | 36.81326 | 77.01366 | 183.2925 | no |
| 4-Chlorophenol | 2344.95 | 10027.37 | 15.46776 | 750.3841 | 5314.504 | 15.46776 | 15.46776 | 15.46776 | 36.81326 | 77.01366 | 183.2925 | no |
| 2,3-Dichlorophenol | --- | --- | 6.187103 | --- | --- | 6.187103 | 6.187103 | 6.187103 | 14.72531 | 30.80546 | 73.317 | no |
| 2,5-Dichlorophenol | --- | --- | 77.33879 | --- | --- | 77.33879 | 77.33879 | 77.33879 | 184.0663 | 385.0683 | 916.4625 | no |
| 2,6-Dichlorophenol | --- | --- | 30.93552 | --- | --- | 30.93552 | 30.93552 | 30.93552 | 73.62653 | 154.0273 | 366.585 | no |
| 3,4-Dichlorophenol | --- | --- | 46.40327 | --- | --- | 46.40327 | 46.40327 | 46.40327 | 110.4398 | 231.041 | 549.8775 | no |
| 2,4-Dichlorophenocy-acetic acid (2,4-D) | --- | --- | 15467.76 | --- | --- | 15467.76 | 15467.76 | 15467.76 | 36813.26 | 77013.66 | 183292.5 | no |
| 2-(2,4,5-Trichlorophen-oxy) propionic acid (2,4,5-TP, Silvex) | --- | --- | 1546.776 | --- | --- | 1546.776 | 1546.776 | 1546.776 | 3681.326 | 7701.366 | 18329.25 | no |
| METALS AND CYANIDE | | | | | | | | | | | | |
| Total Arsenic | 4626.054 | 17419.24 | 17196.88 | 1480.337 | 9232.199 | 17196.88 | 1480.337 | 1939.242 | 4603.849 | 9655.446 | 22922.47 | no |
| Total Cadmium | 1095.496 | 261.6482 | 5489.695 | 350.5588 | 138.6735 | 5489.695 | 138.6735 | 181.6623 | 431.2747 | 904.4932 | 2147.308 | no |
| Chromium III | 25142.23 | 69569.92 | 40854.4 | 8045.513 | 36872.06 | 40854.4 | 8045.513 | 10539.62 | 25021.55 | 52476.57 | 124581.8 | no |
| Chromium VI | 96.19807 | 552.6541 | 19901.69 | 30.78338 | 292.9067 | 19901.69 | 30.78338 | 40.32623 | 95.73632 | 200.7835 | 476.6692 | no |
| Total Copper | 599.6948 | 3285.403 | 550772.9 | 191.9023 | 1741.264 | 550772.9 | 191.9023 | 251.3921 | 596.8163 | 1251.676 | 2971.536 | no |
| Total Lead | 4133.038 | 1373.835 | 51043.6 | 1322.572 | 728.1324 | 51043.6 | 728.1324 | 953.8534 | 2264.492 | 4749.217 | 11274.86 | no |
| Total Mercury | 29.56882 | 1.745488 | 861.6034 | 9.462024 | 0.925109 | 861.6034 | 0.925109 | 1.211892 | 2.877088 | 6.033988 | 14.32496 | no |
| Total Nickel | 39425.33 | 37348.75 | --- | 12616.11 | 19794.83 | --- | 12616.11 | 16527.1 | 39236.09 | 82288.1 | 195355.7 | no |
| Total Zinc | 4556.781 | 35493.74 | 3507727 | 1458.17 | 18811.68 | 3507727 | 1458.17 | 1910.203 | 4534.909 | 9510.861 | 22579.22 | no |
| Total Cyanide | 281.0267 | 282.0196 | 102675 | 89.92854 | 149.4704 | 102675 | 89.92854 | 117.8064 | 279.6778 | 586.5557 | 1392.51 | no |
| DIOXIN | | | | | | | | | | | | |
| 2,3,7,8 TCDD; dioxin | --- | --- | 0.000283 | --- | --- | 0.000283 | 0.000283 | 0.000283 | 0.000673 | 0.001407 | 0.003349 | no |
| VOLATILE COMPOUNDS | | | | | | | | | | | | |
| Benzene | 13769.7 | 58754.09 | 437.8373 | 4406.303 | 31139.67 | 437.8373 | 437.8373 | 437.8373 | 1042.053 | 2179.983 | 5188.36 | no |
| Bromoform | 17939.18 | 76510.89 | 1552.332 | 5740.537 | 40550.77 | 1552.332 | 1552.332 | 1552.332 | 3694.551 | 7729.031 | 18395.09 | no |
| Bromodichloromethane | --- | --- | 79.60678 | --- | --- | 79.60678 | 79.60678 | 79.60678 | 189.4641 | 396.3606 | 943.3381 | no |
| Carbon Tetrachloride | 16714.66 | 71288.3 | 87.56746 | 5348.691 | 37782.8 | 87.56746 | 87.56746 | 87.56746 | 208.4105 | 435.9966 | 1037.672 | no |
| Chloroform | 17694.27 | 75466.37 | 2109.58 | 5662.168 | 39997.18 | 2109.58 | 2109.58 | 2109.58 | 5020.799 | 10503.55 | 24998.46 | no |
| Dibromochloromethane | --- | --- | 155.2332 | --- | --- | 155.2332 | 155.2332 | 155.2332 | 369.4551 | 772.9031 | 1839.509 | no |
| 1,2-Dichloroethane | 72246.52 | 308132.6 | 143.2922 | 23118.88 | 163310.3 | 143.2922 | 143.2922 | 143.2922 | 341.0354 | 713.449 | 1698.009 | no |
| 1,1-Dichloroethylene | 7102.2 | 30291 | 19.90169 | 2272.704 | 16054.23 | 19.90169 | 19.90169 | 19.90169 | 47.36603 | 99.09014 | 235.8345 | no |
| 1,3-Dichloropropylene | 3710.287 | 15824.44 | 1525.121 | 1187.292 | 8386.951 | 1525.121 | 1187.292 | 1555.352 | 3692.478 | 7744.068 | 18384.77 | no |
| Ethylbenzene | 19592.28 | 83561.38 | 369679.4 | 6269.528 | 44287.53 | 369679.4 | 6269.528 | 8213.082 | 19498.23 | 40892.77 | 97081.31 | no |
| Methyl Chloride | 336742.2 | 1436211 | --- | 107757.5 | 761191.9 | --- | 107757.5 | 141162.3 | 335125.9 | 702844.5 | 1668585 | no |
| Methylene Chloride | 118165.9 | 503979.6 | 1751.349 | 37813.09 | 267109.2 | 1751.349 | 1751.349 | 1751.349 | 4168.211 | 8719.932 | 20753.44 | no |
| 1,1,2,2-Tetrachloro-ethane | 5706.25 | 24337.25 | 63.68542 | 1826 | 12898.74 | 63.68542 | 63.68542 | 63.68542 | 151.5713 | 317.0884 | 754.6705 | no |

| (*1) Toxic Parameters | (*2) Instream Conc. ug/L | (*3) CuEffluent /Tech (Avg) lbs/day | (*4) Effluent /Tech (Max) lbs/day | (*5) MQL ug/L | (*6) Effluent 1=No 0=95 % | (*7) 95th % estimate Non-Tech lbs/day | (*8) Numerical Criteria Acute FW ug/L | (*9) Chronic FW ug/L | (*10) HHDW ug/L | (*11) HH Carcinogen Indicator "C" |
|---|---|---|---|---|---|---|---|---|---|---|
| VOLATILE COMPOUNDS (cont'd) | | | | | | | | | | |
| Tetrachloroethylene | | 12 | 36 | 10 | 1 | | 1290 | 645 | 0.65 | C |
| Toluene | | 9 | 25 | 10 | 1 | | 1270 | 635 | 6100 | |
| 1,1,1-Trichloroethane | | 7 | 19 | 10 | 1 | | 5280 | 2640 | 200 | |
| 1,1,2-Trichloroethane | | 9 | 30 | 10 | 1 | | 1800 | 900 | 0.56 | C |
| Trichloroethylene | | 8 | 20 | 10 | 1 | | 3900 | 1950 | 2.8 | C |
| Vinyl Chloride | | 33 | 72 | 10 | 1 | | | | 1.9 | C |
| ACID COMPOUNDS | | | | | | | | | | |
| 2-Chlorophenol | | | | 10 | | | 258 | 129 | 0.1 | |
| 2,4-Dichlorophenol | | 5 | 16 | 10 | 1 | | 202 | 101 | 0.3 | |
| | | 6 | 18 | | 1 | | | | | |
| BASE NEUTRAL COMPOUNDS | | | | | | | | | | |
| Benzidine | | | | 50 | | | 250 | 125 | 0.00008 | C |
| Hexachlorobenzene | | 35 | 135 | 10 | 1 | | | | 0.00025 | C |
| Hexachlorabutadiene | | 27 | 70 | 10 | 1 | | 5.1 | 1.02 | 0.09 | C |
| PESTICIDES | | | | | | | | | | |
| Aldrin | | | | 0.05 | | | 3 | | 0.00004 | C |
| Hexachlorocyclohexane (gamma BHC, Lindane) | | | | 0.05 | | | 5.3 | 0.21 | 0.11 | C |
| Chlordane | | | | 0.2 | | | 2.4 | 0.0043 | 0.00019 | C |
| 4,4'-DDT | | | | 0.1 | | | 1.1 | 0.001 | 0.00019 | C |
| 4,4'-DDE | | | | 0.1 | | | 52.5 | 10.5 | 0.00019 | C |
| 4,4'-DDD | | | | 0.1 | | | 0.03 | 0.006 | 0.00027 | C |
| Dieldrin | | | | 0.1 | | | 0.2374 | 0.0557 | 0.00005 | C |
| Endosulfan | | | | 0.1 | | | 0.22 | 0.056 | 0.47 | |
| Endrin | | | | 0.1 | | | 0.0864 | 0.0375 | 0.26 | |
| Heptachlor | | | | 0.05 | | | 0.52 | 0.0038 | 0.00007 | C |
| | | | | 1 | | | 2 | 0.014 | | |
| Toxaphene | | | | 5 | | | 0.73 | 0.0002 | 0.00024 | C |
| Other Parameters: | | | | | | | | | | |
| Fecal Col.(col/100ml) | | | | | | | | | | |
| Chlorine | | 56 | 92 | | 1 | | 19 | 11 | | |
| Ammonia | | | | | | | | | | |
| Chlorides | | | | | | | | | | |
| Sulfates | | | | | | | | | | |
| TDS | | | | | | | | | | |

Appendix B-1
Dow Chemical
LA0003301, AI1409



| (*1) Toxic Parameters | (*12) WLAa Acute | (*13) WLAc Chronic | (*14) WLAh HHDW | (*15) LTAa Acute | (*16) LTAc Chronic | (*17) LTAh HHDW | (*18) Limiting A,C,HH | (*19) WQBL Avg 001 | (*20) WQBL Max 001 | (*21) WQBL Avg 001 | (*22) WQBL MaxWQBL? 001 | (*23) Need |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | lbs/day | lbs/day | |
| Tetrachloroethylene | 7898.136 | 33685.68 | 258.722 | 2527.404 | 17853.41 | 258.722 | 258.722 | 258.722 | 615.7584 | 1288.172 | 3065.849 | no |
| Toluene | 7775.684 | 33163.42 | 943533.3 | 2488.219 | 17576.61 | 943533.3 | 2488.219 | 3259.567 | 7738.361 | 16229.32 | 38529.14 | no |
| 1,1,1-Trichloroethane | 32327.25 | 137876.3 | 30935.52 | 10344.72 | 73074.42 | 30935.52 | 10344.72 | 13551.59 | 32172.08 | 67473.07 | 160184.2 | no |
| 1,1,2-Trichloroethane | 11020.65 | 47003.27 | 222.899 | 3526.61 | 24911.74 | 222.899 | 222.899 | 222.899 | 530.4996 | 1109.81 | 2641.347 | no |
| Trichloroethylene | 23878.09 | 101840.4 | 1114.495 | 7640.987 | 53975.43 | 1114.495 | 1114.495 | 1114.495 | 2652.498 | 5549.048 | 13206.73 | no |
| Vinyl Chloride | --- | --- | 756.2644 | --- | --- | 756.2644 | 756.2644 | 756.2644 | 1799.909 | 3765.425 | 8961.712 | no |
| ACID COMPOUNDS | | | | | | | | | | | | |
| 2-Chlorophenol | 1579.627 | 6737.136 | 15.46776 | 505.4807 | 3570.682 | 15.46776 | 15.46776 | 15.46776 | 36.81326 | 77.01366 | 183.2925 | no |
| 2,4-Dichlorophenol | 1236.762 | 5274.812 | 46.40327 | 395.764 | 2795.65 | 46.40327 | 46.40327 | 46.40327 | 110.4398 | 231.041 | 549.8775 | no |
| BASE NEUTRAL COMPOUNDS | | | | | | | | | | | | |
| Benzidine | 1530.647 | 6528.233 | 0.031843 | 489.8069 | 3459.963 | 0.031843 | 0.031843 | 0.031843 | 0.075786 | 0.158544 | 0.377335 | no |
| Hexachlorobenzene | --- | --- | 0.099508 | --- | --- | 0.099508 | 0.099508 | 0.099508 | 0.23683 | 0.495451 | 1.179173 | yes |
| Hexachlorabutadiene | 31.22519 | 53.27038 | 35.82305 | 9.99206 | 28.2333 | 35.82305 | 9.99206 | 13.0896 | 31.07531 | 65.17285 | 154.7233 | no |
| PESTICIDES | | | | | | | | | | | | |
| Aldrin | 18.36776 | --- | 0.015921 | 5.877683 | --- | 0.015921 | 0.015921 | 0.015921 | 0.037893 | 0.079272 | 0.188668 | no |
| Hexachlorocyclohexane (gamma BHC, Lindane) | 32.44971 | 10.96743 | 43.78373 | 10.38391 | 5.812738 | 43.78373 | 5.812738 | 7.614687 | 18.07762 | 37.91338 | 90.00809 | no |
| Chlordane | 14.69421 | 0.224571 | 0.075626 | 4.702146 | 0.119023 | 0.075626 | 0.075626 | 0.075626 | 0.179991 | 0.376543 | 0.896171 | no |
| 4,4'-DDT | 6.734845 | 0.052226 | 0.075626 | 2.15515 | 0.02768 | 0.075626 | 0.02768 | 0.03626 | 0.086084 | 0.18054 | 0.42861 | no |
| 4,4'-DDE | 321.4358 | 548.3715 | 0.075626 | 102.8594 | 290.6369 | 0.075626 | 0.075626 | 0.075626 | 0.179991 | 0.376543 | 0.896171 | no |
| 4,4'-DDD | 0.183678 | 0.313355 | 0.107469 | 0.058777 | 0.166078 | 0.107469 | 0.058777 | 0.076998 | 0.182796 | 0.38337 | 0.910137 | no |
| Dieldrin | 1.453502 | 2.90898 | 0.019902 | 0.465121 | 1.54176 | 0.019902 | 0.019902 | 0.019902 | 0.047366 | 0.09909 | 0.235835 | no |
| Endosulfan | 1.346969 | 2.924648 | 72.69846 | 0.43103 | 1.550064 | 72.69846 | 0.43103 | 0.564649 | 1.340503 | 2.811378 | 6.67434 | no |
| Endrin | 0.528991 | 1.95847 | 40.21617 | 0.169277 | 1.037989 | 40.21617 | 0.169277 | 0.221753 | 0.526452 | 1.104105 | 2.621195 | no |
| Heptachlor | 3.183745 | 0.198458 | 0.027862 | 1.018798 | 0.105183 | 0.027862 | 0.027862 | 0.027862 | 0.066312 | 0.138726 | 0.330168 | no |
| Toxaphene | 4.469488 | 0.010445 | 0.095528 | 1.430236 | 0.005536 | 0.095528 | 0.005536 | 0.007252 | 0.017217 | 0.036108 | 0.085722 | no |
| Other Parameters: | | | | | | | | | | | | |
| Fecal Col.(col/100ml) | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | no |
| Chlorine | 116.3291 | 574.4845 | --- | 37.22532 | 304.4768 | --- | 37.22532 | 48.76517 | 115.7708 | 242.8008 | 576.4203 | no |
| Ammonia | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | no |
| Chlorides | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | no |
| Sulfates | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | no |
| TDS | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | no |
| | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | no |
| | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | no |

APPENDIX B-2 LA0003301, AI No. 1409

Documentation and Explanation of Water Quality Screen
and Associated Lotus Spreadsheet

Each reference column is marked by a set of parentheses enclosing a number and asterisk, for example (*1) or (*19). These columns represent inputs, existing data sets, calculation points, and results for determining Water Quality Based Limits for an effluent of concern. The following represents a summary of information used in calculating the water quality screen:

Receiving Water Characteristics:

Receiving Water: Mississippi River
Critical Flow, Qrc (cfs): 141,955
Harmonic Mean Flow, Qrh (cfs): 366,748
Segment No.: 070301
Receiving Stream Hardness (mg/L): 153
Receiving Stream TSS (mg/L): 32
MZ Stream Factor, Fs: 1/3
Plume distance, Pf: N/A

Effluent Characteristics:

Company: Dow Chemical Company
Facility flow, Qe (MGD): 597
Effluent Hardness: N/A
Effluent TSS: N/A
Pipe/canal width, Pw: N/A
Permit Number: LA0003301

Variable Definition:
Qrc, critical flow of receiving stream, cfs
Qrh, harmonic mean flow of the receiving stream, cfs
Pf = Allowable plume distance in feet, specified in LAC 33.IX.1115.D
Pw = Pipe width or canal width in feet
Qe, total facility flow , MGD
Fs, stream factor from LAC.IX.33.11 (1 for harmonic mean flow)
Cu, ambient concentration, ug/L
Cr, numerical criteria from LAC.IX.1113, Table 1
WLA, wasteload allocation
LTA, long term average calculations
WQBL, effluent water quality based limit
ZID, Zone of Initial Dilution in % effluent
MZ, Mixing Zone in % effluent

Formulas used in aquatic life water quality screen (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{Qe}{(Qrc \times 0.6463 \times Fs + Qe)}$$

$$\text{WLA a,c,h} = \frac{\text{Cr}}{\text{Dilution Factor}} - \frac{(\text{Fs} \times \text{Qrc} \times 0.6463 \times \text{Cu})}{\text{Qe}}$$

Static water bodies (in the absence of a site specific dilution):

Discharge from a pipe:

$$\text{Critical Dilution} = \frac{(2.8)\ \text{Pw}\ \pi^{1/2}}{\text{Pf}}$$

$$\text{WLA} = \frac{(\text{Cr-Cu})\ \text{Pf}}{(2.8)\ \text{Pw}\ \pi^{1/2}}$$

Discharge from a canal:

$$\text{Critical Dilution} = \frac{(2.38)(\text{Pw}^{1/2})}{(\text{Pf})^{1/2}}$$

$$\text{WLA} = \frac{(\text{Cr-Cu})\ \text{Pf}^{1/2}}{2.38\ \text{Pw}^{1/2}}$$

Formulas used in human health water quality screen, human health non-carcinogens (dilution type WLA):

Streams:

$$\text{Dilution Factor} = \frac{\text{Qe}}{(\text{Qrc} \times 0.6463 + \text{Qe})}$$

$$\text{WLA a,c,h} = \frac{\text{Cr}}{\text{Dilution Factor}} - \frac{(\text{Qrc} \times 0.6463 \times \text{Cu})}{\text{Qe}}$$

Formulas used in human health water quality screen, human health carcinogens (dilution type WLA):

$$\text{Dilution Factor} = \frac{\text{Qe}}{(\text{Qrh} \times 0.6463 + \text{Qe})}$$

$$\text{WLA a,c,h} = \frac{\text{Cr}}{\text{Dilution Factor}} - \frac{(\text{Qrh} \times 0.6463 \times \text{Cu})}{\text{Qe}}$$

Static water bodies in the absence of a site specific dilution (human health carcinogens and human health non-carcinogens):

Discharge from a pipe:

$$\text{Critical Dilution} = \frac{(2.8)\ \text{Pw}\ \pi^{1/2}}{\text{Pf}}$$

$$\text{WLA} = \frac{(\text{Cr-Cu})\ \text{Pf*}}{(2.8)\ \text{Pw}\ \pi^{1/2}}$$

Discharge from a canal:

$$\text{Critical Dilution} = \frac{(2.38)(\text{Pw}^{1/2})}{(\text{Pf})^{1/2}}$$

$$\text{WLA} = \frac{(\text{Cr-Cu})\ \text{Pf}^{1/2*}}{2.38\ \text{Pw}^{1/2}}$$

* Pf is set equal to the mixing zone distance specified in LAC 33:IX.1115 for the static water body type, i.e., lake, estuary, Gulf of Mexico, etc.

If a site specific dilution is used, WLA are calculated by subtracting Cu from Cr and dividing by the site specific dilution for human health and aquatic life criteria.

$$WLA = \frac{(Cr-Cu)}{\text{site specific dilution}}$$

Longterm Average Calculations:
LTAa = WLAa X 0.32
LTAc = WLAc X 0.53
LTAh = WLAh

WQBL Calculations:
Select most limiting LTA to calculate daily max and monthly avg WQBL

If aquatic life LTA is more limiting:
Daily Maximum = Min(LTAa, LTAc) X 3.11
Monthly Average = Min(LTAc, LTAc) X 1.31

If human health LTA is more limiting:
Daily Maximum = LTAh X 2.38
Monthly Average = LTAh

Mass Balance Formulas:

mass (lbs/day): (ug/L) X 1/1000 X (flow, MGD) X 8.34 = lbs/day

$$\text{concentration(ug/L)}: \frac{\text{lbs/day}}{\text{(flow, MGD) X 8.34 X 1/1000}} = \text{ug/L}$$

The following is an explanation of the references in the spreadsheet.

(*1) Parameter being screened.
(*2) Instream concentration for the parameter being screened in ug/L. In the absence of accurate supporting data, the instream concentration is assumed to be zero (0).
(*3) Monthly average effluent or technolgy value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.
(*4) Daily maximum technology value in concentration units of ug/L or mass units of lbs/day. Units determined on a case-by-case basis as appropriate to the particular situation.
(*5) Minimum analytical Quantification Levels (MQL's). Established in a letter dated January 27, 1994 from Wren Stenger of EPA Region 6 to Kilren Vidrine of LDEQ and from the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". The applicant must test for the parameter at a level at least as sensitive as the specified MQL. If this is not done, the MQL becomes the application value for screening purposes if the pollutant is suspected to be present

on-site and/or in the waste stream. Units are in ug/l or lbs/day depending on the units of the effluent data.

(*6) States whether effluent data is based on 95th percentile estimation. A "1" indicates that a 95th percentile approximation is being used, a "0" indicates that no 95th percentile approximation is being used.

(*7) 95th percentile approximation multiplier (2.13). The constant, 2.13, was established in memorandum of understanding dated October 8, 1991 from Jack Ferguson of Region 6 to Jesse Chang of LDEQ and included in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". This value is screened against effluent Water Quality Based Limits established in columns (*18) - (*21). Units are in ug/l or lbs/day depending on the units of the measured effluent data.

(*8) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, acute criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations. Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations.

Hardness Dependent Criteria:

| Metal | Formula |
|---|---|
| Cadmium | $e^{(1.1280[\ln(\text{hardness})] - 1.6774)}$ |
| Chromium III | $e^{(0.8190[\ln(\text{hardness})] + 3.6880)}$ |
| Copper | $e^{(0.9422[\ln(\text{hardness})] - 1.3884)}$ |
| Lead | $e^{(1.2730[\ln(\text{hardness})] - 1.4600)}$ |
| Nickel | $e^{(0.8460[\ln(\text{hardness})] + 3.3612)}$ |
| Zinc | $e^{(0.8473[\ln(\text{hardness})] + 0.8604)}$ |

Dissolved to Total Metal Multipliers for Freshwater Streams (TSS dependent):

| Metal | Multiplier |
|---|---|
| Arsenic | $1 + 0.48 \times TSS^{-0.73} \times TSS$ |
| Cadmium | $1 + 4.00 \times TSS^{-1.13} \times TSS$ |
| Chromium III | $1 + 3.36 \times TSS^{-0.93} \times TSS$ |
| Copper | $1 + 1.04 \times TSS^{-0.74} \times TSS$ |
| Lead | $1 + 2.80 \times TSS^{-0.80} \times TSS$ |
| Mercury | $1 + 2.90 \times TSS^{-1.14} \times TSS$ |
| Nickel | $1 + 0.49 \times TSS^{-0.57} \times TSS$ |
| Zinc | $1 + 1.25 \times TSS^{-0.70} \times TSS$ |

Dissolved to Total Metal Multipliers for Marine Environments (TSS dependent):

| Metal | Multiplier |
|---|---|

| | |
|---|---|
| Copper | $1 + (10^{4.86} \times TSS^{-0.72} \times TSS) \times 10^{-6}$ |
| Lead | $1 + (10^{6.06} \times TSS^{-0.85} \times TSS) \times 10^{-6}$ |
| Zinc | $1 + (10^{5.36} \times TSS^{-0.52} \times TSS) \times 10^{-6}$ |

If a metal does not have multiplier listed above, then the dissolved to total metal multiplier shall be 1.

(*9) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, freshwater (FW) or marine water (MW) (whichever is applicable) aquatic life protection, chronic criteria. Units are specified. Some metals are hardness dependent. The hardness of the receiving stream shall generally be used, however a flow weighted hardness may be determined in site-specific situations. Dissolved metals are converted to Total metals using partition coefficients in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Similar to hardness, the TSS of the receiving stream shall generally be used, however, a flow weighted TSS may be determined in site-specific situations.
Hardness dependent criteria:

| Metal | Formula |
|---|---|
| Cadmium | $e^{(0.7852[\ln(hardness)] - 3.4900)}$ |
| Chromium III | $e^{(0.8473[\ln(hardness)] + 0.7614)}$ |
| Copper | $e^{(0.8545[\ln(hardness)] - 1.3860)}$ |
| Lead | $e^{(1.2730[\ln(hardness)] - 4.7050)}$ |
| Nickel | $e^{(0.8460[\ln(hardness)] + 1.1645)}$ |
| Zinc | $e^{(0.8473[\ln(hardness)] + 0.7614)}$ |

Dissolved to total metal multiplier formulas are the same as (*8), acute numerical criteria for aquatic life protection.

(*10) LAC 33.IX.1113.C.6, Table 1, Numerical Criteria for Specific Toxic Substances, human health protection, drinking water supply (HHDW), non-drinking water supply criteria (HHNDW), or human health non-primary contact recreation (HHNPCR) (whichever is applicable). A DEQ and EPA approved Use Attainability Analysis is required before HHNPCR is used, e.g., Monte Sano Bayou. Units are specified.

(*11) C if screened and carcinogenic. If a parameter is being screened and is carcinogenic a "C" will appear in this column.

(*12) Wasteload Allocation for acute aquatic criteria (WLAa). Dilution type WLAa is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the acute aquatic numerical criteria for that parameter. Units are in ug/L.
Dilution WLAa formulas for streams:

$$WLAa = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAa formulas for static water bodies:
WLAa = (Cr-Cu)/Dilution Factor)
Cr represents aquatic acute numerical criteria from column (*8).
If Cu data is unavailable or inadequate, assume Cu=0.

If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*13) Wasteload Allocation for chronic aquatic criteria (WLAc). Dilution type WLAc is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the chronic aquatic numerical criteria for that parameter. Units are in ug/L.
Dilution WLAc formula:

$$WLAc = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAc formulas for static water bodies:
WLAc = (Cr-Cu)/Dilution Factor)
Cr represents aquatic chronic numerical criteria from column (*9).
If Cu data is unavailable or inadequate, assume Cu=0.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*14) Wasteload Allocation for human health criteria (WLAh). Dilution type WLAh is calculated in accordance with the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards". Negative values indicate that the receiving water is not meeting the human health numerical criteria for that parameter. Units are in ug/L. Dilution WLAh formula:

$$WLAh = (Cr/\text{Dilution Factor}) - \frac{(Fs \times Qrc,Qrh \times 0.6463 \times Cu)}{Qe}$$

Dilution WLAh formulas for static water bodies:
WLAh = (Cr-Cu)/Dilution Factor)
Cr represents human health numerical criteria from column (*10).
If Cu data is unavailable or inadequate, assume Cu=0.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*15) Long Term Average for aquatic numerical criteria (LTAa). WLAa numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.32. WLAa X 0.32 = LTAa.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*16) Long Term Average for chronic numerical criteria (LTAc). WLAc numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 0.53. WLAc X 0.53 = LTAc.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*17) Long Term Average for human health numerical criteria (LTAh). WLAh numbers are multiplied by a multiplier specified in the "Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards" which is 1. WLAc X 1 = LTAh.
If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then a blank shall appear in this column.

(*18) Limiting Acute, Chronic or Human Health LTA's. The most limiting LTA is placed in this column. Units are consistent with the WLA calculation. If standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then the type of limit, Aquatic or Human Health (HH), is indicated.

(*19) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 1.31 to determine the average WQBL ($LTA_{limiting\ aquatic}$ X 1.31 = $WQBL_{monthly\ average}$). If human health criteria was the most limiting criteria then LTAh = $WQBL_{monthly\ average}$. If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then either the human health criteria or the chronic aquatic life criteria shall appear in this column depending on which is more limiting.

(*20) End of pipe Water Quality Based Limit (WQBL) daily maxium in terms of concentration, ug/L. If aquatic life criteria was the most limiting LTA then the limiting LTA is multiplied by 3.11 to determine the daily maximum WQBL ($LTA_{limiting\ aquatic}$ X 3.11 = $WQBL_{daily\ max}$). If human health criteria was the most limiting criteria then LTAh is multiplied by 2.38 to determine the daily maximum WQBL ($LTA_{limiting\ aquatic}$ X 2.38 = $WQBL_{daily\ max}$). If water quality standards are being applied at end-of-pipe, such as in the case of certain TMDL's, then either the human health criteria or the acute aquatic life criteria shall appear in this column depending on which is more limiting.

(*21) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of mass, lbs/day. The mass limit is determined by using the mass balance equations above. Monthly average WQBL, ug/l/1000 X facility flow, MGD X 8.34 = monthly average WQBL, lbs/day.

(*22) End of pipe Water Quality Based Limit (WQBL) monthly average in terms of mass, lbs/day. Mass limit is determined by using the mass balance equations above. Daily maximum WQBL, ug/l/1000 X facility flow, MGD X 8.34 = daily maximum WQBL, lbs/day.

(*23) Indicates whether the screened effluent value(s) need water quality based limits for the parameter of concern. A "yes" indicates that a water quality based limit is needed in the permit; a "no" indicates the reverse.

# Appendix C

Internal Outfall 111 (previously Internal Outfall 1081 in May 2006 Application)

**Monitoring Frequency Reduction for Internal Outfall 111**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 152 | 1/Month | 2 | 1 | 1/Quarter |
| TSS | 253 | 1/Month | 16 | 6 | 1/Quarter |

- All other parameters were below detection and set to a frequency of 1/year.
- Proposed Internal Outfall 111 (1081) replaces current Internal Outfalls 1031, 1041, 1051, 1061, and 1071. These internal outfalls will become sampling locations. However, the sum of the loading values represented above correspond to the sum of the mass limits for $BOD_5$ and TSS at Internal Outfalls 1031, 1041, and 1051 from the current permit.

Internal Outfall 121 (previously Internal Outfall 931)

**Monitoring Frequency Reduction for Internal Outfall 121**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ug/l) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 30 | 1/Month | 7.67 | 25.6 | 1/Quarter |
| TSS | 51 | 1/Month | 14.4 | 28.2 | 1/Quarter |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 201 (previously Internal Outfall 521)

**Monitoring Frequency Reduction for Internal Outfall 201**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ug/l) | Monitoring Frequency | Long Term Average DMR (ug/l) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| 1,2-Dichloroethane | 574 | 1/day | 60 | 10 | 1/week |
| Tetrachloroethylene | 164 | 1/day | 76 | 46 | 1/week |

Internal Outfall 311 (previously Internal Outfall 531)

**Monitoring Frequency Reduction for Internal Outfall 311**

| Parameter | Current Permit | | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
|---|---|---|---|---|---|
| | Monthly Average (ppd) | Monitoring Frequency | | | |
| $BOD_5$ | 456 | 1/Month | 78.2 | 17.1 | 1/Quarter |
| TSS | 767 | 1/Month | 5779.3 | 753.5 | 1/Month |
| Carbon Tetrachloride | 2.12 | 1/Week | 0.75 | 35.2 | 2/Month |
| Chloroform | 1.66 | 1/Week | 1.48 | 88.9 | 1/Week |
| 1,1 Dichloroethane | 0.33 | 1/Week | 0 | 0 | 1/Month |
| 1,2 Dichloroethane | 2.69 | 1/Week | 0 | 0 | 1/Month |
| 1,2 Dichloropropane | 2.93 | 1/Week | 0.24 | 8.2 | 1/Month |
| Tetrachloroethylene | 0.78 | 1/Week | 0.044 | 5.7 | 1/Month |
| Vinyl Chloride | 1.45 | 1/Week | 0 | 0 | 1/Month |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 411 (previously Internal Outfall 301)

The monitoring frequencies for all parameters have been set to 1/month for all parameters.

This internal outfall replaces Internal Outfalls 301 and 641 from the current permit.

Internal Outfall 421 (previously Internal Outfall 911)

**Monitoring Frequency Reduction for Internal Outfall 421**

| Parameter | Current Permit | | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
|---|---|---|---|---|---|
| | Monthly Average (ppd) | Monitoring Frequency | | | |
| $BOD_5$ | 199 | 1/Month | 6.88 | 3 | 1/Quarter |
| TSS | 331 | 1/Month | 81.4 | 25 | 1/Quarter |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 511 (previously Internal Outfall 2501)

**Monitoring Frequency Reduction for Internal Outfall 511**

| Parameter | Current Permit | | Long Term Average DMR (mg/l) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
|---|---|---|---|---|---|
| | Monthly Average (mg/l) | Monitoring Frequency | | | |
| $BOD_5$ | 32 | 1/Month | 3 | 9 | 1/Quarter |
| TSS | 48 | 1/Month | 8 | 20 | 1/Quarter |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 521 (previously Internal Outfall 1521)

**Monitoring Frequency Reduction for Internal Outfall 521**

| Parameter | Current Permit | | Long Term Average DMR (mg/l) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
|---|---|---|---|---|---|
| | Monthly Average (mg/l) | Monitoring Frequency | | | |
| $BOD_5$ | 34 | 1/Month | 5 | 15 | 1/Quarter |
| TSS | 49 | 1/Month | 21 | 43 | 1/Quarter |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 541 (previously Internal Outfall 1531)

**Monitoring Frequency Reduction for Internal Outfall 541**

| Parameter | Current Permit | | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
|---|---|---|---|---|---|
| | Monthly Average (ppd) | Monitoring Frequency | | | |
| $BOD_5$ | 23 | 1/Month | 0.536 | 2 | 1/Quarter |
| TSS | 33 | 1/Month | 0.449 | 1 | 1/Quarter |
| Chloroethane | 0.07 | 1/Week | 0.032 | 46 | 1/Month |
| Methyl Chloride | 1.11 | 1/Week | 0.0356 | 3 | 1/Month |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 551 (previously Internal Outfall 741)

**Monitoring Frequency Reduction for Internal Outfall 551**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 721 | 1/Week | 17 | 2 | 2/Month |
| TSS | 1063 | 1/Week | 682 | 64 | 2/Month |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 611 (previously Internal Outfall 1711)

**Monitoring Frequency Reduction for Internal Outfall 611**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 914 | 1/Month | 274 | 30 | 1/Quarter |
| TSS | 999 | 1/Month | 267 | 27 | 1/Quarter |
| Chloroform | 2.06 | 1/Week | 0.52 | 25 | 1/Month |
| 1,2 Dichloroethane | 3.35 | 1/Week | 0.17 | 5 | 1/Month |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 621 (previously Internal Outfall 2241)

**Monitoring Frequency Reduction for Internal Outfall 621**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (mg/l) | Monitoring Frequency | Long Term Average DMR (mg/l) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 30 | 1/Month | 2 | 7 | 1/Quarter |
| TSS | 46 | 1/Month | 18 | 39 | 1/Quarter |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 631 (previously Internal Outfall 2001)

**Monitoring Frequency Reduction for Internal Outfall 631**

| Parameter | Current Permit | | | | |
|---|---|---|---|---|---|
| | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 5185 | 1/Day | 2530 | 49 | 3/Week |
| TSS | 7793 | 1/Day | 4382 | 56 | 4/Week |
| Chloroform | 3.42 | 2/Week | 2 | 58 | 1/Week |
| 1,2 Dichloroethane | 11.07 | 2/Week | 3.86 | 35 | 2/Month |
| 1,2 Dichloropropane | 24.92 | 2/Week | 6.87 | 28 | 2/Month |
| 1,3 Dichloropropylene | 4.72 | 2/Week | 2.61 | 55 | 1/Week |
| Methyl Chloride | 14 | 2/Week | 5.56 | 40 | 2/Month |
| Methylene Chloride | 6.51 | 2/Week | 0.02 | 0 | 1/Month |

- All other parameters were below detection and set to a frequency of 1/year.

This internal outfall replaces Internal Outfalls 231, 471, 491, and 2001 from the current permit.

Internal Outfall 641 (previously Internal Outfall 3121)

**Monitoring Frequency Reduction for Internal Outfall 641**

| Parameter | Current Permit | | | | |
|---|---|---|---|---|---|
| | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| $BOD_5$ | 52 | 1/Month | 5.5 | 10.6 | 1/Quarter |
| TSS | 86 | 1/Month | 23.7 | 27.5 | 1/Quarter |

- All other parameters were below detection and set to a frequency of 1/year.

Internal Outfall 651 (previously Internal Outfall 3001)

**Monitoring Frequency Reduction for Internal Outfall 651**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| TOC | 55 | 1/Month | 12 | 22 | 1/Quarter |

Outfall 002

**Monitoring Frequency Reduction for Outfall 002**

| | Current Permit | | | | |
|---|---|---|---|---|---|
| Parameter | Monthly Average (ppd) | Monitoring Frequency | Long Term Average DMR (ppd) | Ratio Long Term Average to Permit Limit % | Monitoring Frequency Reissued Permit |
| TOC | 55 | 1/Month | 6.5 | 12 | 1/Quarter |

# Appendix D

# BIOMONITORING FREQUENCY RECOMMENDATION AND RATIONALE FOR ADDITIONAL REQUIREMENTS

Permit Number: **LA0003301**
Facility Name: **The Dow Chemical Company, Louisiana Operations**
Previous Critical Dilution: **0.17%**
Proposed Critical Dilution: **19% (10:1 ACR)**
Date of Review: **08/24/06; revised 7/09/09**
Name of Reviewer: **Laura Thompson**

Recommended Frequency by Species:

| | |
|---|---|
| ***Pimephales promelas* (Fathead minnow):** | **Once/Quarter[1]** |
| ***Daphnia pulex* (water flea):** | **Once/Quarter[1]** |

Recommended Dilution Series: **8%, 11%, 14%, 19%, and 26%**

Number of Tests Performed during previous 5 years by Species:

| | |
|---|---|
| ***Pimephales promelas* (Fathead minnow):** | **21** |
| ***Daphnia pulex* (water flea):** | **21** |
| ***Ceriodaphnia dubia* (water flea):** | **N/A – Testing of species was not required** |

Number of Failed Tests during previous 5 years by Species:

| | |
|---|---|
| ***Pimephales promelas* (Fathead minnow):** | **No failures on file during the past 5 years** |
| ***Daphnia pulex* (water flea):** | **No failures on file during the past 5 years** |
| ***Ceriodaphnia dubia* (water flea):** | **N/A – Testing of species was not required** |

Failed Test Dates during previous 5 years by Species:

| | |
|---|---|
| ***Pimephales promelas* (Fathead minnow):** | **No failures on file during the past 5 years** |
| ***Daphnia pulex* (water flea):** | **No failures on file during the past 5 years** |
| ***Ceriodaphnia dubia* (water flea):** | **N/A – Testing of species was not required** |

Previous TRE Activities: **N/A – No previous TRE Activities**

[1] If there are no lethal effects demonstrated after the first year of quarterly testing, the permittee may certify fulfillment of the WET testing requirements in writing to the permitting authority. If granted, the biomonitoring frequency for the test species may be reduced to not less than once per year for the less sensitive species (usually *Pimephales promelas*) and not less than twice per year for the more sensitive species (usually *Daphnia pulex*). Upon expiration of the permit, the biomonitoring frequency for both species shall revert to once per quarter until the permit is re-issued.

Additional Requirements (including WET Limits) Rationale / Comments Concerning Permitting:

**The Dow Chemical Company, Louisiana Operations owns and operates an industrial organic and inorganic chemical facility in Plaquemine, Iberville Parish, Louisiana. LPDES Permit LA0003301, effective March 1, 2002, contained freshwater acute biomonitoring as an effluent characteristic of Outfall 001 for *Daphnia pulex* and *Pimephales promelas*. The effluent series consisted of 0.07%, 0.10%, 0.13%, 0.17%, and 0.24% concentrations, with the 0.17% effluent concentration being defined as the critical dilution. The testing was to be performed quarterly for *Daphnia pulex* and *Pimephales promelas*. Data on file indicate that the permittee has complied with the biomonitoring requirements contained in LA0003301 with no failures from a toxicity test in the last five years.**

**It is recommended that freshwater acute biomonitoring continue to be an effluent characteristic of Outfall 001 (combined discharge of 597 mgd of process wastewaters, maintenance and utility wastewaters, stormwater, groundwater remediation water, water from fire-water testing, hydrostatic test wastewater, and once-through non-contact cooling water) in LA0003301. The effluent dilution series shall be 8%, 11%, 14%, 19%, and 26% concentrations, with the 19% effluent concentration being defined as the critical biomonitoring dilution (the 10:1 Acute-to-Chronic ratio has been implemented). If there are no significant lethal effects demonstrated at or below the critical dilution during the first four quarters of testing, the permittee may certify fulfillment of the WET testing requirements to the permitting authority and WET testing may be reduced to not less than once per six months for the more sensitive species (usually *Daphnia pulex*) and not less than once per year for the less sensitive species (usually *Pimephales promelas*) for the remainder of the life of the permit. Upon expiration of the permit, the monitoring frequency for both test species shall revert to once per quarter until the permit is re-issued.**

**This recommendation is in accordance with the LDEQ/OES Permitting Guidance Document for Implementing Louisiana Surface Water Quality Standards, Water Quality Management Plan Volume 3. Version 6 (April 16, 2008), and the Best Professional Judgment (BPJ) of the reviewer.**

# Appendix E

| The Dow Chemical Company<br>Louisiana Operations<br>LA0003301, AI 1409<br>Outfall Consolidation Project | | |
|---|---|---|
| **Proposed Permit** | **2006 Application** | **2002 Permit** |
| Final Outfall 001 | Final Outfall 001 | Final Outfall 001 and Internal Outfalls 2921, 2931, 2941, 2951, and 7401 |
| Internal Outfall 101 | New Internal Outfall 112 | Internal Outfalls 541, 1011, 2911, 2961, 2971, and 6201 |
| Internal Outfall 111 | New Internal Outfall 1081 | Internal Outfalls 1031, 1041, 1051, 1061, and 1071 |
| Internal Outfall 121 | Internal Outfall 931 | Internal Outfall 931 |
| Internal Outfall 201 | Internal Outfall 521 | Internal Outfall 521 |
| Internal Outfall 301 | New Internal Outfall 114 | Internal Outfalls 411, 421, 431, 441, 451, 461, 481, 511, and 3331 |
| Internal Outfall 311 | Internal Outfall 531 | Internal Outfall 531 |
| Internal Outfall 401 | New Internal Outfall 115 | Internal Outfalls 111, 331, 351, 361, 371, 381, 751, 1311, 1321, 1901, 3101, 3351, 3361, |
| Internal Outfall 411 | Internal Outfall 301 | Internal Outfalls 301 and 341 |
| Internal Outfall 421 | Internal Outfall 911 | Internal Outfall 911 |
| Internal Outfall 501 | New Internal Outfall 116 | Internal Outfalls 211, 251, 711, 811, 1411, 1551, 2511, 3911, 4031, 5811, 5821, |
| Internal Outfall 511 | Internal Outfall 2501 | Internal Outfall 2501 |
| Internal Outfall 521 | Internal Outfall 1521 | Internal Outfall 1521 |
| Internal Outfall 531 | Internal Outfall 1561 | Internal Outfall 1561 |
| Internal Outfall 541 | Internal Outfall 1531 | Internal Outfall 1531 |
| Internal Outfall 551 | Internal Outfall 741 | Internal Outfall 741 |
| Internal Outfall 601 | New Internal Outfall 117 | Internal Outfalls 1731, 2231, and 3131 |
| Internal Outfall 611 | Internal Outfall 1711 | Internal Outfall 1711 |
| Internal Outfall 621 | Internal Outfall 2241 | Internal Outfall 2241 |
| Internal Outfall 631 | Internal Outfall 2001 | Internal Outfall 231, 471, 491, and 2001 |
| Internal Outfall 641 | Internal Outfall 3121 | Internal Outfall 3121 |
| Internal Outfall 651 | Internal Outfall 3001 | Internal Outfall 3001 |
| Final Outfall 002 | Final Outfall 002 | Final Outfall 002 |

Invoice No._____ July 22, 2009 Page 1

LOUISIANA WATER POLLUTION CONTROL FEE SYSTEM
RATING WORKSHEET
PERMIT NO. LA0003301 AI NO: 1409 Activity No.: PER20060028

1.a. Company Name The Dow Chemical Company

1.b. Facility Name Louisiana Operations

2. Local Mailing Address Post Office Box 150

Plaquemine, Louisiana 70765

3. Billing Address (If different) _____

4.a. Facility Location 21255 Louisiana Highway 1 in Plaquemine

4.b. Parish Iberville and West Baton Rouge

5. Facility Type organic chemical manufacturing plant

6. Products Produced _____

6.a. Raw materials stored or used _____

6.b. By-products produced _____

7. Primary SIC Code 2869 7.a. Other SIC Codes 2821, 2819, 2812, and 4911

8. Fac. Manager Sharon Cole 8.a. Telephone (225) 353-8000

9. Owner _____ 9.a. Telephone _____

10. Env. Contact Ed Keough 10.a. Telephone (985) 783-4107

| | |
|---|---|
| 11. State Permit No._____ | 12. NPDES Permit No. LA0003301 |
| 11.a. Date Issued_____ | 12.a. Effective Date 03/01/02 |
| 11.b. New_____Modified_____ | 12.b. Expiration Date 11/30/06 |

13. Number and Identification of Outfalls 001-treated process wastewaters, utility wastewaters, sanitary wastewater, and stormwater runoff and 002-utility wastewater and stormwater runoff

14. Number of Injection Wells N/A

15. Water Source(s) _____

16. Receiving Water(s) Mississippi River (Outfalls 001 and 002)

17. River Basin Mississippi River 18. Basin Segment No. 070301

TOTAL RATING POINTS ASSIGNED: 7117 Federal Tax I. D. No.: N/A

sl Initials of Rater

Invoice No._____ **ANNUAL FEE RATING WORKSHEET - INDUSTRIAL** Page 2
**PERMIT NO. LA0003301, AI No. 1409, PER20060028**

1. FACILITY COMPLEXITY DESIGNATION
Primary SIC 2869 Other SIC 2821, 2819, 2812
Complexity Designation =

| | | |
|---|---|---|
| _____ | I | ( 0 points) |
| _____ | II | (10 points) |
| _____ | III | (20 points) |
| _____ | IV | (30 points) |
| _____ | V | (40 points) |
| ✓ | VI | (50 points) |

**COMPLEXITY DESIGNATION POINTS 50**

2. FLOW VOLUME AND TYPE

A. Wastewater Type I
Is total Daily Average Discharge greater than 400 mgd?
_____ Yes, then points = 200
_____ No, then
Points = 0.5 X Total Daily Average Discharge (mgd)
Points = 0.5 X _____ =
Total points =

B. Wastewater Type II
Points = 10 X Total Daily Average Discharge (mgd)
Points = 10 X 597 = 5970
Total points = 5970

C. Wastewater Type III
Points = 2 X Total Daily Average Discharge (mgd)
Points = 2 X _____ =
Total points = 0

**FLOW VOLUME AND TYPE POINTS 5970**

3. POLLUTANTS

A. BOD or
Daily Average Load =

| | | |
|---|---|---|
| _____ | ≤ 50 lb/day | (0 points) |
| _____ | > 50 - 500 | (5 points) |
| _____ | > 500 - 1000 | (10 points) |
| _____ | > 1000 - 3000 | (20 points) |
| _____ | > 3000 - 5000 | (30 points) |
| _____ | > 5000 lb/day | (calculate) |

Points = 0.008 X Daily Average Load (lbs)
Points = 0.008 X 7885 = 63

COD or
Daily Average Load =

| | | |
|---|---|---|
| _____ | ≤ 100 lb/day | ( 0 points) |
| _____ | > 100 - 500 | ( 5 points) |
| _____ | > 500 - 1000 | (10 points) |
| _____ | > 1000 - 5000 | (20 points) |
| _____ | > 5000 - 10000 | (30 points) |
| _____ | > 10000 lb/day | (calculate) |

Points = 0.004 X Daily Average Load (lbs)
Points = 0.004 X 0 = 0

BOD OR COD DEMAND POINTS 63
(whichever is greater)

Invoice No. _____
Page 3

**ANNUAL FEE RATING WORKSHEET - INDUSTRIAL**

**PERMIT NO. LA0003301, AI No. 1409, PER20060028**

B. TSS
Daily Average Load =

| | | |
|---|---|---|
| _____ | ≤ 100 lb/day | ( 0 points) |
| _____ | > 100 - 500 | ( 5 points) |
| _____ | > 500 - 1000 | (10 points) |
| _____ | > 1000 - 5000 | (20 points) |
| _____ | > 5000 - 10000 | (30 points) |
| _____ | > 10000 lb/day | (calculate) |

Points = 0.004 X Daily Average Load (lbs)
Points = 0.004 X 14828 = 59

TSS POINTS 59

C. TOXICS
Total Annual Discharge to Water = 91,949 (lbs)

Points = 0.01 X Annual discharge (lbs)
Points = 0.01 X 91,949 = 920

TOXIC POINTS 920

**TOTAL POLLUTANT POINTS 1042**

4. TEMPERATURE (HEAT LOAD)
Heat Load = Average Summer flow (mgd) X °T X 0.00834
where °T = Permit Limit (Max. Temp.) -70°
Heat Load = 0 (mgd) X 0 X 0.00834 = 0 Billion BTU

| | | |
|---|---|---|
| Heat Load = 0 | ≤ 4 billion BTU | ( 0 points) |
| _____ | > 4-20 billion BTU | ( 5 points) |
| _____ | > 20-100 billion BTU | (10 points) |
| _____ | > 100-200 billion BTU | (15 points) |
| _____ | > 200 billion BTU | (20 points) |

**HEAT LOAD POINTS 0**

5. POTENTIAL PUBLIC HEALTH IMPACTS
Is the receiving water to which the wastewater is discharged or a water body to which it is a tributary used as a drinking water supply source within 50 miles downstream?

_____ No (0 points)
__✓__ Yes, then . . . Complexity Designation

| | | |
|---|---|---|
| _____ | I, II | ( 0 points) |
| _____ | III | ( 5 points) |
| _____ | IV | (10 points) |
| _____ | V | (20 points) |
| __✓__ | VI | (30 points) |

**POTENTIAL PUBLIC HEALTH IMPACT POINTS 30**

6. MAJOR/MINOR FACILITY DESIGNATION
Has your facility been designated a Major Facility by the administrative authority?

__✓__ Yes, then Points = 25
_____ No, then

were effluent limitations assigned to the discharge based on water quality factors in the receiving stream?

_____ No, then Points = 0
_____ Yes, then Points = 5

**TOTAL MAJOR/MINOR POINTS 25**

TOTAL RATING POINTS ASSIGNED 7117